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Sel. Untested Queens.	1.50; 25 to 99, 1.25
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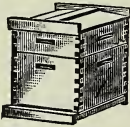
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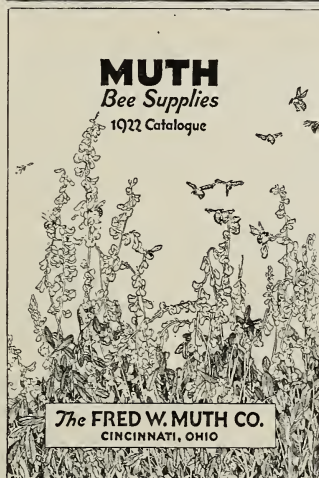
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HONEY MARKETS

U. S. GOVERNMENT MARKET REPORTS.

Information From Producing Areas (First Half of March).

CALIFORNIA POINTS.—A bumper honey crop is looked for, although the season may be late on account of cold weather. Some plant species in southern California have been in bloom for several weeks. Bees are active. Supplies are light, the demand very limited. The market is largely nominal, with few recent sales. Quotations f. o. b. California points, for eastern shipment, in less-than-carlots or pooled carlots, follow: White orange blossom 11c, light amber sage 8c, extra light amber sage 8½c, light amber alfalfa 6¾-7c. Little demand is reported for beeswax, which is selling lightly at 22c cash or 25c in trade.

INTERMOUNTAIN REGION.—Heavy losses are feared due to continued cold. Many colonies short of stores. Supplies of many beekeepers are practically exhausted. The best grades of white alfalfa and sweet clover honey in 5-gal. cans are being sold at 8-8½c per lb. in carlots and at 9-10c in less-than-carlots. Carlots of fancy and No. 1 white comb have been sold at \$3.50-3.75 per 24-section case, with less-than-carlots moving at \$4.00 per case. A few beekeepers are selling white extracted to near-by dealers in carlots and less as low as 7½-7¾c per lb. Inquiry still active, but many sales held up because of high freight rates to eastern markets. The beeswax market remains at 20-26c per lb. for average yellow.

PACIFIC NORTHWEST.—Present indications are for a rather heavy winter loss. Supplies of honey very light. Light alfalfa and sweet clover reported selling in 5-gal. cans at rather wide range in prices, 8-12½c per lb.

TEXAS POINTS.—Severe weather early in the month killed the early bloom in many sections, thus depriving bees of much-needed pollen. Hackberry is budding and prospects are bright for a good flow from mesquite. Recent rains have improved crop outlook, which long-continued drought and cold had rendered uncertain. Very little honey reported left in hands of beekeepers. Light amber extracted sold in a small way at 8½-10c in 60-lb. cans. Beekeepers are receiving 20-24c in cash per lb. for beeswax.

EAST CENTRAL AND NORTH CENTRAL STATES.—Colonies have come through the winter so far with little loss where sufficiently protected. Honey plants in northern part were generally well covered with snow during winter, but crop prospects are less favorable in southern section on account of limited snowfall. Demand shows some improvement, but movement still rather slow. Considerable dark honey still on hand, but white clover cleaning up fairly well. Carlots of white clover extracted quoted around 9½c per lb. at shipping point, with sales of 5-gal. cans in less-than-carlots ranging 9½-13c, mostly around 12c per lb. Amber grades have sold 7½-10c per lb. in 60-lb. cans, with some sales of dark stock reported low as 5½c. Large amounts extracted white clover sold in Michigan direct to consumers at 25c per lb. in 10-lb. pails and at 22½c per lb. in 5-lb. tins.

PLAINS AREA.—Bees in outdoor stands had good flight days in the month. Crop prospects not favorable due to lack of moisture during the winter and reduction in alfalfa acreage. Honey is largely out of producers' hands. A little white clover extracted in 60-lb. cans brought 12-12½c per lb. Beeswax was sold at 25-26c per lb.

NORTHEASTERN STATES.—Bees are generally reported to have come through so far with very little loss. The outlook for the new crop is good, as clover fields in most sections have been covered with snow. Buckwheat has been selling in carloads in 160-lb. kegs and 60-lb. cans at 7c per lb. and 8-9c per lb. in less-than-carlots. Small lot sales of white clover in 60-lb. cans reported at 10½-13c per lb.

SOUTHERN STATES.—Unusually cold weather has checked the brood-rearing and nectar secretion. Bees said to be more dormant than for any season in 10 years. Shipments of package bees will therefore be later than usual. Much extracted honey still on hand in Alabama and Georgia.

WEST INDIES.—Prices in Cuba have advanced to 4¾c per lb. f. o. b. Quotations delivered to Holland have been received at 57c per gal., including cost and freight. Reports have been received that a considerable quantity of Porto Rican as well as South American honey has gone to foreign markets, notably Holland, at prices higher than the shippers can realize in the United States.

Telegraphic Reports from Important Centers, March 14.

BOSTON.—Demand and movement slightly improved for extracted honey. Market steady for West Indian stock, slightly weaker for California. Comb: Sales to retailers, New York, 24-section cases No. 1 white clover \$6.50-7.00. Vermont, 20-section cases carton stock No. 1 white clover \$6.50-7.00. Extracted: Sales to confectioners and bottlers, California, white sage 13-14½c per lb. Brokers' quotations in either straight or pooled cars, delivered Boston basis, per lb., California, white sage 12c, light amber 8-9c, amber 7-7½c.

CHICAGO.—Demand and movement very slow. Market weak; prices have changed but slightly during past two weeks. Extracted: Sales to bottlers, bakers and candy manufacturers, Colorado, Montana and Wyoming, alfalfa white 10-11c, light amber 9-9½c, dark amber mostly 8c. Michigan and Wisconsin, white clover 11-12c. Comb: Sales to retailers, Colorado and Montana, 24-section cases best clover and alfalfa \$4.75-5.00, poorer low as \$3.50. Beeswax: Demand and movement moderate, market about steady. Sales to wholesale druggists, shoe manufacturers and harness-makers, Colorado and California, best 30-31c, poorer 24-26c.

NEW YORK.—Domestic receipts limited, foreign receipts moderate. Supplies moderate. Demand moderate, movement limited, market steady. Extracted: Spot sales to jobbers, wholesalers, confectioners, bakers and bottlers, California, light amber alfalfa mostly 7c, light amber sage 9-10c, white sage 11-12c, white orange blossom 12-14c. Intermountain Region, white sweet clover 10½-11c. New York white clover mostly 10-11c, buckwheat 7-8c, South American, refined, best 65-68c, poorer low as 60c per gal. Beeswax: Foreign receipts limited. Supplies rather limited. Demand moderate, market steady. Spot sales to wholesalers, manufacturers and drug trade, South American and West Indian, crude light best 21-23c, few 24c, poorer low as 18c, dark 14-15c. African, dark mostly 15-16c.

ST. LOUIS.—Supplies generally moderate. Demand and movement fairly good, market steady. Prices practically unchanged. Comb: Sales to wholesalers in 24-section cases, Colorado, white alfalfa and clover No. 1 heavy \$6.25. Sales direct to retailers in small lots, Colorado, white alfalfa and clover No. 1 heavy \$6.75. Extracted: Small lots sales in 5-gal. cans direct to retailers, per lb., California, light amber alfalfa 10-11c. Southern light amber various mixed flavors 10c. Beeswax: Nearby and southern, average quoted on sales to jobbers, 23c per lb.

From Producers' Associations.

The demand for extracted honey has improved quite a little of late, and it looks now that strictly first-class bottling stock would be all cleaned up before another crop comes on. There is still some comb honey on hand in carload lots throughout the Inter-Mountain region, but there is very little interest shown by jobbers in comb honey. Losses in bees through Wyoming and Montana are likely to be quite heavy.

The Colorado Honey Producers' Assn.,
Denver, Colo. F. Rauchfuss, Secy.

Buyers are manifesting considerable interest in extracted honey but hesitate to pay our price of 8½c per lb. There is no interest shown in comb honey. There was practically no winter loss in bees except in one of our districts which reported an abnormally heavy loss.

Idaho-Oregon Honey Producers' Assn.,
Caldwell, Idaho. P. S. Farrell, Secy.

Honey retails at 15c per pound in 5 and 10 lb. containers. The few sales that have been made in larger lots have been for 8c, 60-lb. basis. The condition of the bees and the honey plants is somewhat improved. Severe cold snaps the first of the

month stopped brood-rearing; but, as the cold was accompanied by rain, the general outlook for a honey crop is much better than a month ago.

Texas Honey Producers' Assn.,

San Antonio, Texas. E. G. LeStourgeon, Mgr.

CUBA.—Honey is 48c a gallon; wax, 21c a pound.

A. Marzol.

Matanzas, Cuba, March 9.

The Opinions of Honey Producers Themselves as Reported to Gleanings in Bee Culture.

Early in March we sent to actual honey producers and some associations the following questions:

1. What portion of the 1921 crop, if any, is still in the hands of producers in your locality? Give answer in per cent.
2. What price are producers receiving at their station when sold in large lots? (a) Comb honey? (b) Extracted honey?
3. What are prices to retailers in small lots? (a) Comb honey per case, fancy or No. 1? (b) Extracted honey in five-pound pails or other retail packages?

The A. I. Root Company's Quotations.

We are in the market for one carlot of white clover honey, for which we will pay 11 cents cash f. o. b. Medina. Samples to be submitted. We are not in the market for any other honey.

No shipments of honey will be accepted under any conditions except as ordered by our purchasing department.

Medina, Ohio.

The A. I. Root Company.

4. How is honey now moving on the market in your locality? Give answer in one word, as slow, fair, rapid.
5. What is the per cent of winter loss of bees, if any, in your locality?
6. What is the condition of the bees at present as compared with normal? Give answer in per cent. (a) As to strength of colonies? (b) As to amount of stores?
7. What is the condition of the honey plants at this time, compared with normal? Give answer in per cent.

The answers as returned by our honey and bee reporters are as follows:

State.	Reported	Crop Unsold.	In large lots. Comb.	Extr.	To Retailers. Comb.	Extr.	Move- ment.	Winter Loss.	Colonies. Str'gth.	Plant Stores.	Condition.
Ala.	J. M. Cutts.....	15.....	.....	\$.08.....	.....	\$.60.....	Slow.....	0.....	125.....	125.....	125
Ala.	J. C. Dickman....	8.....	\$5.75.....	.09.....	.....	.90.....	Fair.....	5.....	90.....	75.....	100
Ark.	J. Johnson.....	15.....	.....	.....	\$4.80.....	.....	Fair.....	2.....	100.....	100.....	100
B. C.	W. J. Sheppard....	2.....	.....	.28.....	.....	1.75.....	Fair.....	10.....	100.....	100.....	100
Cal.	L. L. Andrews.....	.....	.....	.11.....	6.00.....	.75.....	Fair.....	20.....	100.....	60.....	100
Cal.	G. Larian.....	.....	.....	.....	.....	.....	Fair.....	5.....	100.....	100.....	100
Cal.	M. A. Saylor.....	5.....	.....	.....	3.60.....	.75.....	Fair.....	5.....	100.....	100.....	100
Colo.	J. A. Green.....	5.....	.....	.09.....	4.60.....	.60.....	Fair.....	0.....	100.....	85.....	100
Colo.	J. H. Wagner.....	8.....	3.55.....	.11.....	4.10.....	.75.....	Fair.....	0.....	100.....	110.....	100
Colo.	B. W. Hopper.....	0.....	.....	.....	.....	.....	Slow.....	2.....	90.....	80.....	90
Conn.	A. Latham.....	5.....	.....	.....	7.50.....	.....	Rapid.....	1.....	110.....	100.....	100
Conn.	A. W. Yates.....	0.....	.....	.....	.....	.....	Fair.....	.....	100.....	100.....	100
Fla.	H. Hewitt.....	1.....	.....	.10.....	.....	.85.....	Slow.....	2.....	100.....	100.....	125
Fla.	W. Lamkin.....	2.....	.....	.....	.....	.75.....	Fair.....	.....	90.....	.....	100
Fla.	C. C. Cook.....	12.....	.....	.10.....	.....	.75.....	Fair.....	3.....	100.....	100.....	100
Ga.	J. J. Wilder.....	40.....	.....	.11.....	.....	.75.....	Fair.....	5.....	100.....	100.....	100
Ida.	J. E. Miller.....	0.....	.....	.10.....	.....	.55.....	.....	.....	.....	.....	100
Ill.	A. L. Kildow.....	1.....	.....	.....	.....	.....	Rapid.....	1.....	110.....	98.....	100
Ind.	T. C. Johnson.....	.....	.....	.....	6.00.....	1.00.....	Slow.....	0.....	100.....	100.....	100
Ind.	E. S. Miller.....	30.....	.....	.....	6.00.....	1.00.....	Fair.....	10.....	100.....	90.....	90
Ind.	J. Smith.....	0.....	.....	.....	8.50.....	.....	Fair.....	25.....	75.....	50.....	100
Iowa.	F. Coverdale.....	1.....	.....	.....	.....	.....	Slow.....	15.....	105.....	70.....	80
Iowa.	E. G. Brown.....	10.....	.....	.11.....	5.00.....	.80.....	Fair.....	.....	.....	.....	90
Iowa.	W. S. Pangburn....	20.....	.....	.14.....	.....	.85.....	Slow.....	.....	100.....	100.....	.....
Kan.	J. A. Nininger.....	.....	.....	.....	6.00.....	.75.....	Slow.....	0.....	100.....	85.....	100
Ky.	P. C. Ward.....	10.....	.....	.....	.....	.....	Slow.....	0.....	100.....	100.....	100
La.	E. C. Davis.....	15.....	.....	.08.....	.....	.75.....	Fair.....	0.....	125.....	100.....	100
Me.	O. B. Griffin.....	7.....	.....	.....	6.00.....	.....	Slow.....	0.....	85.....	80.....	90
Md.	S. G. Crocker, Jr..	5.....	5.50.....	.....	5.75.....	1.00.....	Slow.....	7.....	95.....	100.....	100
Mass.	O. M. Smith.....	0.....	.....	.....	.....	.....	Slow.....	5.....	100.....	100.....	100
Mich.	F. Markham.....	5.....	.....	.12.....	.....	.80.....	Slow.....	0.....	100.....	125.....	100
Miss.	R. B. Willson.....	10.....	.....	.08.....	.....	.85.....	Slow.....	2.....	100.....	125.....	100
Mont.	R. A. Bray.....	20.....	5.25.....	.11.....	6.00.....	.95.....	Fair.....	5.....	95.....	95.....	.....
Mo.	J. W. Romberger..	0.....	5.60.....	.11.....	6.25.....	.95.....	Fair.....	10.....	80.....	50.....	50
N. C.	C. S. Bumgarner..	.....	.....	.....	.....	.....	Slow.....	10.....	90.....	90.....	110
N. Y.	G. B. Howe.....	.....	.....	.....	.....	1.25.....	Rapid.....	.....	100.....	.....	.....
N. Y.	F. W. Lesser.....	0.....	4.80.....	.....	.....	1.00.....	Slow.....	0.....	100.....	100.....	80
N. Y.	Adams & Myers....	.....	.....	.....	6.00.....	1.00.....	Fair.....	0.....	100.....	75.....	50
Ohio.	E. G. Baldwin.....	5.....	.....	.....	.....	.....	.....	1.....	105.....	105.....	.....
Ohio.	J. F. Moore.....	5.....	.....	.12.....	4.50.....	.85.....	Fair.....	5.....	90.....	90.....	90
Ohio.	R. D. Hiatt.....	5.....	.....	.....	6.00.....	1.10.....	Fair.....	.....	95.....	90.....	.....
Okla.	J. Heuelsen.....	0.....	.....	.....	.....	.....	Rapid.....	3.....	95.....	25.....	100
Okla.	C. F. Stiles.....	0.....	.....	.....	.....	.....	Slow.....	10.....	90.....	80.....	100
Ore.	E. J. Ladd.....	5.....	.....	.....	5.50.....	1.00.....	Slow.....	10.....	50.....	25.....	100
Ore.	H. A. Scullen.....	9.....	.....	.....	.....	1.00.....	Fair.....	10.....	90.....	75.....	80
Pa.	H. Beaver.....	3.....	.....	.....	3.00.....	.65.....	Fair.....	.....	90.....	90.....	100
Pa.	G. H. Rea.....	.....	.....	.....	7.00.....	1.00.....	Fair.....	10.....	100.....	100.....	100
Pa.	D. C. Gilham.....	8.....	.....	.....	7.00.....	1.00.....	Fair.....	5.....	95.....	90.....	120
S. C.	A. S. Conradi.....	0.....	.....	.....	6.00.....	.....	Fair.....	.....	95.....	95.....	100
S. D.	L. A. Syverud.....	.....	.....	.....	3.75.....	.65.....	Fair.....	10.....	85.....	85.....	95
Tex.	T. A. Bowden.....	10.....	.....	.....	.....	.75.....	Slow.....	.....	90.....	100.....	85
Tex.	J. N. Mayes.....	0.....	.....	.....	.....	.....	.....	2.....	90.....	80.....	50
Tex.	H. B. Parks.....	0.....	.....	.08.....	.....	.65.....	Slow.....	3.....	90.....	90.....	85
Utah.	N. E. Miller.....	10.....	.....	.....	.....	.....	Fair.....	.....	.....	.....	.....
Utah.	M. A. Gill.....	1.....	.....	.10.....	.....	.....	.....	.....	.....	.....	.....
Vt.	J. E. Crane.....	0.....	.....	.....	.....	.....	Rapid.....	20.....	75.....	80.....	100
Va.	L. N. Gravely.....	0.....	4.80.....	.....	.....	1.25.....	Fair.....	.....	100.....	.....	.....
Wash.	W. L. Cox.....	0.....	.....	.12.....	6.00.....	.75.....	Slow.....	0.....	98.....	95.....	95
Wash.	G. W. York.....	25.....	.....	.09.....	6.00.....	.75.....	Fair.....	30.....	80.....	75.....	85
Wash.	G. W. B. Saxton..	30.....	.....	.12.....	6.00.....	.65.....	Slow.....	35.....	75.....	50.....	100
W. Va.	T. K. Massie.....	0.....	.....	.....	.....	1.10.....	Slow.....	10.....	75.....	90.....	100
Wis.	F. Hassinger, Jr..	3.....	Slow.....	0.....	90.....	85.....	100
Wis.	H. F. Wilson.....	2.....14.....	1.05.....	Rapid.....	10.....	100.....
Wyo.	A. D. Brown.....	40.....	5.75.....	.75.....	Slow.....	20.....	75.....	50.....	105

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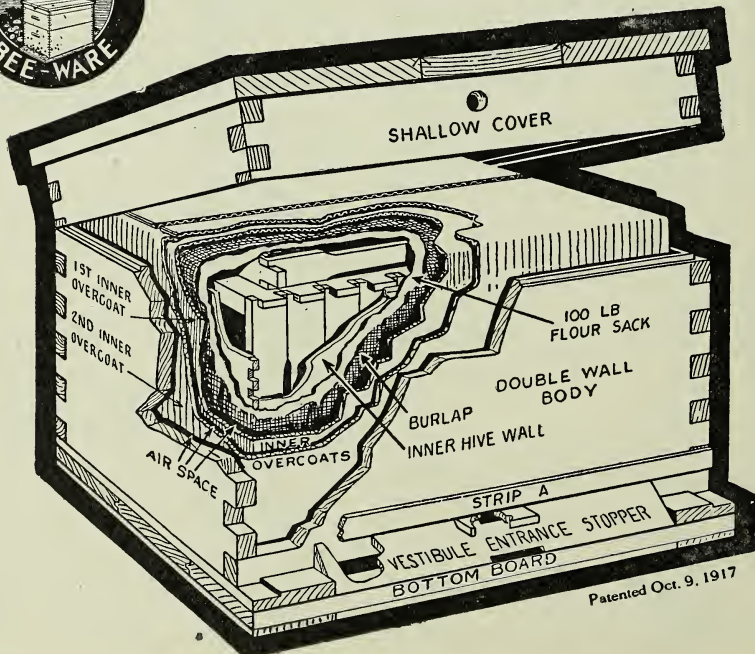
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Jumbo Size, crate of five, K. D., 10-frame... 6.85

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SERVE
NEW
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BEEKEEPERS.



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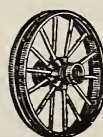
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High or low wheels—steel or wood—wide or narrow tires. Steel or wood wheels to fit any running gear. Wagon parts of all kinds. Write today for free catalog illustrated in colors.

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DON'T DELAY---GET OUR PRICES
WE SAVE YOU MONEY

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SUPPLIES --- QUEENS --- FOUNDATION

W. T. FALCONER MFG. COMPANY

FALCONER (Near Jamestown) NEW YORK

“Where the best beehives come from.”

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PRIVACY AND ABSOLUTE SAFETY

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The SAVINGS DEPOSIT BANK CO.
THE HOME OF THE HONEY-BEE MEDINA, OHIO

ROOT QUALITY QUEENS

SOMETHING ABOUT THEM.

Fifty years of continuous breeding up to the present Root Quality Queens and Bees. A. I. Root bought the first mother of this strain from Langstroth 55 years ago. No expense or pains has been spared to develop this strain of improved three-banded leather-colored Italians.

PRICES OF ROOT QUALITY QUEENS.

April 15 to June 30—

	1 to 9.	10 to 24.	25 to 49.	50 to 99.	100 or over.
Untested ..	\$2.00 ea.	\$1.80 ea.	\$1.70 ea.	\$1.60 ea.	\$1.50 ea.
Sel. Untested	2.50 ea.	2.25 ea.	2.10 ea.	2.00 ea.	1.85 ea.
Tested	3.00 ea.	2.70 ea.	2.55 ea.	2.40 ea.	2.25 ea.
Sel. Tested.	3.50 ea.	3.15 ea.	3.00 ea.	2.80 ea.	2.60 ea.

July 1 to November 1—

	1 to 9.	10 to 24.	25 to 49.	50 to 99.	100 or over.
Untested ...	\$1.50 ea.	\$1.40 ea.	\$1.35 ea.	\$1.25 ea.	\$1.15 ea.
Sel. Untested	2.00 ea.	1.90 ea.	1.80 ea.	1.70 ea.	1.60 ea.
Tested	2.50 ea.	2.35 ea.	2.25 ea.	2.10 ea.	2.00 ea.
Sel. Tested..	3.00 ea.	2.85 ea.	2.70 ea.	2.55 ea.	2.40 ea.

PRICES OF BEES IN COMBLESS PACKAGES BY EXPRESS.

April 15 to September 1—

C310700—1-pound package..	\$3.00; 25 or more..	\$2.85 ea.
C310800—2-pound package..	5.00; 25 or more..	4.75 ea.
C310801—3-pound package..	7.00; 25 or more..	6.60 ea.

Add price of queen wanted to package price given above.

Early deliveries will be made from our Alabama apiaries.

THE A. I. ROOT COMPANY, MEDINA, OHIO, U. S. A.

SUPERIOR ITALIAN BEES AND QUEENS

With this guarantee, that is, if they are not entirely satisfactory, we want to replace them.

Untested queens to June 15: 1, \$1.25; 10 or more, \$10.00

Tested queens to June 15: 1, \$2.00; 10 or more, \$17.00

SPECIAL

For orders received this month for shipment from May 10 to June 1 we will make a special price on good, strong three-frame nuclei with queens.

PACKAGE BEES

One pound, with queen - - \$4.00; 10 or more, \$3.50

Two pounds, with queen - - 5.50; 10 or more, 5.00

THE STOVER APIARIES, MAYHEW, MISSISSIPPI

QUEENS---QUEENS

PACKAGE BEES AND NUCLEI

Read what a breeder from France wrote: "Queen received in fine condition; after being on the road 21 days, only three bees dead. Thank you very much for sending me a \$100.00 queen for \$5.00. I used her for a breeder, and every customer that bought her daughters has re-

ordered for 1922. She is a wonder. I have bought dozens of queens from Italy, and she is ahead of them all. I have compared her bees with the best breeders of the country, and she is at the top."

1922 PRICES.

**Booking Orders Now.
Safe Arrival Guaranteed.**

1-lb. package	\$2.25 each
25 or more	2.15 each
2-lb. package	3.75 each
25 or more	3.60 each
3-lb. package	5.25 each
25 or more	5.00 each
2-comb nuclei	3.75 each
3-comb nuclei	5.25 each
(Add price of queen wanted.)	
1 Untested Queen...	\$1.50 each
25 or more	1.30 each
1 Select Untested...	1.70 each
25 or more	1.50 each
1 Tested	2.25 each
25 or more	2.00 each
1 Select Tested	2.65 each
25 or more	2.25 each

It is cheaper to pay a little more and get the best; they are hustlers, hardy, very resistant to European foul brood, etc., etc. Send for circulars. I ship thousands of pounds of bees every year all over the U. S. A. and Canada. One-fifth down with order; balance just before shipping.

THE NUECES COUNTY APIARIES

E. B. AULT, Prop.

CALLEN, TEXAS

THREE-BANDED QUEENS

BEES IN PACKAGES FOR 1922

After twenty-six years of select breeding we have a strain of Bright Three-banded Italian Bees that are unsurpassed for their disease-resisting (especially European foul brood) and honey-gathering qualities. Read what others say about them:

"Enclosed find \$75.00 for 50 queens. I want these for requeening colonies that have European foul brood as I find your strain resistant. One of the queens bought of you last season built up from a nucleus and made 360 pounds of surplus honey."—Pennsylvania.

"I find your bees gentle, best of workers, and they stand the long winters here fine."—Manitoba, Canada."

"The two-pound packages I got of you last year made an average of 150 pounds of sur-

plus honey. I find your bees not only hustlers but also gentle."—Illinois.

"The one-pound packages bought of you made a surplus average of 175 pounds of extracted honey and an increase of 39%, which is as fine a record as can be had in this locality, especially when the work is done entirely by amateurs."—Pennsylvania.

"I am well pleased with the bees I got from you last year as they paid for themselves and made a nice profit."—Iowa.

Price List of Packages With Young Queens by Express.

1-lb. packages, \$4.00 each; 12 or more, \$3.75 each. 1½-lb. packages, \$4.75 each; 12 or more, \$4.60 each. 2-lb. packages, \$5.50 each; 12 or more, \$5.00 each. 3-lb. packages, \$7.25 ea.; 12 or more, \$6.75 ea. If packages are wanted by parcel post, add 10%.

Select untested queens, \$1.50 each; 12 or more, \$1.40 each. Select tested queens, \$3.00 each; 12 or more, \$2.75 each. Wings of queens clipped free of charge.

We guarantee our bees and queens to give absolute satisfaction and to arrive in perfect condition with the exception of those shipped by express to Canada. The largest packages we are able to ship by mail to Canada are our 1½-lb. Canadian Specials. Bees will be shipped promptly date named, 10% cash with order and the balance just before shipment.

**M. C. BERRY & CO., BOX 697, MONTGOMERY, ALA., U. S. A.
WAS HAYNEVILLE, ALABAMA.**

DON'T BE CONFUSED

¶ In buying a larger hive than the ten-frame Langstroth hive. Quinby invented an eight-frame hive with frames about $11\frac{1}{4}$ inches deep. It was long ago found inadequate in size and was made into a ten-frame hive, a size we have offered for some years.

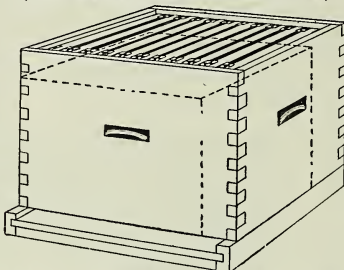
¶ Charles Dadant found the ten-frame Quinby depth hive needed another frame. He also found it a beekeeping necessity to change this hive further, and evolved the $1\frac{1}{2}$ -inch spacing from center to center of the frames. This is the real principle to be considered in the

MODIFIED DADANT HIVE

(REGISTRATION APPLIED FOR)

Deep frames $11\frac{1}{4}$ inches.
Frame space ventilation,
swarm control easier, $6\frac{1}{4}$ -
inch extracting frames.

Large one-story brood-nest,
adequate winter stores,
greater brood-room, stand-
ard covers, bottoms.



Present equipment may be
used as super equipment on
Modified Dadant brood-
chambers. Covers and bot-
toms for this hive are the
familiar metal roof cover
with inner cover and regu-
lar standard bottoms, ex-
cept for larger dimensions.

The standard of workmanship is "Beeware." Write for free booklet on this hive to

**G. B. LEWIS COMPANY, Watertown, Wisconsin.
DADANT & SONS, Hamilton, Illinois.**

There's a Distributor near you.

Beekeepers!

We urge you to place your orders for Bee Supplies NOW, and be prepared for the honey flow. We offer a complete line of Bee Supplies and we are positive that our prices will interest you. We make a specialty of manufacturing supplies for comb-honey production and will appreciate the opportunity of quoting you our special prices on quantities.

—o—

Send us your name and address and we will send you a copy of our new illustrated catalog free.

August Lotz Company
BOYD, WISCONSIN

ITALIAN BEES AND QUEENS

With two thousand strong, healthy colonies of Italian Bees to draw from, with experienced help and proper equipment we can fill all orders promptly. Write for price list and special prices in car load shipments.

**SAFE DELIVERY AND SAT-
ISFACTION GUARANTEED.**

	April	May	June
1-fr. nucleus with queen.	\$4.00	\$3.50	\$3.00
2-fr. nucleus with queen.	5.50	5.00	4.50
3-fr. nucleus with queen.	7.00	6.50	6.00
4-fr. nucleus with queen.	8.50	8.25	7.75

POUND PACKAGES WITHOUT QUEENS

1 pound Italian Bees.....	\$2.50
2 pounds Italian Bees.....	4.00
3 pounds Italian Bees.....	5.75
Add \$1.50 for queen.	20% with order.

WEBER BROS. HONEY CO.
RIALTO, CALIFORNIA

APRIL ANNOUNCEMENT

Bee Supplies

They are all "Root Quality." Our line is complete. You will do well by getting your supplies early. Send for our catalog.

Beginner's Outfits

We are offering a New Outfit, very moderate in price. Send for circular.

Friction Top Pails

2½-lb. cans, 5-lb. and 10-lb. pails. New prices now in effect. How many do you want?

"A" Grade Paste

For tin pails—it sticks. One pint, 25c; one quart, 45c; one gallon, \$1.50. Remember it sticks.

A Million Berry Baskets

and crates to hold them. "A" grade wood baskets. Wax-lined paper baskets. Send for price list.

Beeswax Wanted for Cash or Goods

M. H. HUNT & SON

510 N. Cedar Street.

LANSING, MICHIGAN

This Is For You, Mr. Beekeeper!

Get a good start this season. Order our supplies and get them early. Now is the time, for you know April showers bring May flowers, and before you know it the bees will be humming in the clover.

**BEE PREPARED
BEE SATISFIED**

Write for our catalog.

F. A. SALISBURY

1631 W. Genesee Street
SYRACUSE, N. Y.

We Are the HUB for HUBAM

Guaranteed, certified, Annual Sweet Clover.

All new crop, grown on our own farms and all from the first fifty seeds from that original plant at Ames.

We are shipping to all parts of the world now. HUBAM is being planted somewhere every day for bee pasture, hay, pasture, or for green manure to plow in.

The seed is hulled and scarified, with a purity of 99.8% and grows 97%. Price now is \$2.00 per pound.

With each and every order for Hubam we will include FREE a can of Nitrogen pure culture bacteria which will insure proper growth of the Hubam plant.

Our seed is pure. You buy from an old established firm with a reputation to maintain when you buy from

**THE HENRY FIELDS SEED COMPANY
SHENANDOAH, IOWA.**

Three-Banded Queens Only Package Bees and Queens for 1922

Our Special Offer

ONE PACKAGE FREE WITH EVERY SIX ORDERED.

Price of packages by express with young queens.

1-lb. package, \$4.00 each; 6, \$3.90 each; 12, \$3.75 each. 2-lb. packages, \$5.50 each; 6, \$5.25 each; 12, \$5.00 each. 3-lb. packages, \$7.25 each; 6, \$7 each; 12, \$6.75 each.

Price of Queens

ONE QUEEN FREE WITH EVERY SIX ORDERED.

Select untested, \$1.50 each; 12 or more, \$1.40 each. Select tested, \$3.00 each; 12 or more \$2.75 each. If package bees are wanted by parcel post, add 10% for postage.

Our bees are wonderful honey gatherers, gentle and very resistant to all diseases. Give us your order and we are confident that you will be pleased with our strain of bees. In comparing our prices with others remember we give you one package free with every six you buy. Pure mating, safe arrival and satisfaction guaranteed. Wings of queens clipped on request. We ship the day specified. 10 per cent cash with order, balance just before shipment is made.

**HAYNEVILLE APIARY CO.
HAYNEVILLE, ALABAMA.**

QUEENS & BEES



Mr. Beekeeper: — We have the stock, equipment, and experience, and can give you prompt, satisfactory service. We are not going to say that we have the best bees in U. S. A., but we do say that we have as good as can be bought for the money. Give **NORMAN BROS.** 3-banded Italian queens and bees a trial and see for yourself. You

risk not a brown penny; if you are not satisfied, notify us and we will replace or refund your money. Our bees are hardy, gentle prolific, disease-resisting and honey-gatherers. Orders booked with 1/4 down. After April 15 orders filled by return mail.

PRICES APRIL AND MAY.

	1	6	12	100
Untested queens...	\$1.00	\$5.50	\$10.00	\$72.00
Sel. Untested...	1.20	6.50	12.00	90.00
Tested queens...	2.00	11.00	21.00	
Select tested...	2.25 each.			
One 2-lb. package bees,	\$3.75;	12 or more,		
\$3.50 each. Add price of queens wanted.				

We guarantee pure mating, safe arrival, free from all diseases. Isn't that enough said?

NORMAN BROS. APIARIES, Naftel, Ala.

Annual Sweet Clover Seed for Sale at Low Prices

Fifteen years ago M. C. Berry discovered this wonderful plant growing on the "Old Gilmer Plantation," near Tyson, Ala. Since that time we have watched with interest its great spread and growth throughout Alabama, its native home. As a plow-under green manure crop it has no superior, and for honey it has no equal. In gathering this seed, through a misunderstanding, we had a lot that was mixed with biennial. Therefore our loss is your gain, as we are selling this seed hulled and scarified at the unheard-of low prices, as long as this lot of seed lasts.

In 5 or 10 pound lots by parcel post prepaid, 30c a pound.

In 25 to 50 pound lots by express prepaid, 25c a pound.

In 50 to 100 pound lots by express prepaid, 20c a pound.

Seed is guaranteed to be pure sweet clover running from 50 to 90 per cent pure Annual, the balance Biennial. Germination we also guarantee to fully please.

M. C. BERRY & CO.

Montgomery, Ala.

Box 697

CHADWICK'S QUEENS

THREE-BANDED
ITALIANS ONLY

At quality-sustaining prices. Rear-ed, caged and mailed without being touched by hands. Properly prepared for the mails. From Selma, California, to Hankow, China, 47 days in the mails is my unequalled record.

Prices: One, \$2.00. Three, \$4.50. Six, \$8.00. Dozen, \$15.00. Fifty, \$60. Hundred, \$110.00.

GET MY NEW BOOKLET,

"Big Essentials in Successful Beekeeping"

Read what leading beekeepers say of it:

"I think you have the book well named 'Big Essentials,' and in my judgment you have hit the big essentials."—E. R. ROOT.

"I can find no criticism to make of your statements * * * I regard your discussion of these as sound."—FRANK C. PELLETT.

"It is well written and the views you express are thoroughly sound and good."—W. J. SHEPPARD.

"It is mighty good stuff."—J. D. BIXBY.

"It is well written and has many good points."—M. H. MENDLESON.

PRICE \$1.00 PER COPY.

P. C. CHADWICK

Box 186, Selma, California.

HIGH QUALITY QUEENS NUCLEI AND PACKAGE BEES

Untested queens, \$1.25 each; \$13.50 per dozen; 25 or more, \$1.00 each. Select untested, \$1.50 each; \$15.00 per dozen; 25 or more, \$1.15 each. Select tested, \$2.25 each; \$25 per doz. 2-frame nucleus, \$4.25; 3-frame nucleus, \$5.75. 1-pound package, \$2.50; 2-pound package, \$4.25; 3-pound package, \$5.75. Add price of queen wanted with nucleus or package. Fullest satisfaction guaranteed. Read what this customer says:

"Dear Mr. Bornhoffer: We want to tell you how greatly pleased we are with the nuclei we got of you this spring. Those we received of you a year ago this spring far excelled those received from other shippers of nuclei in the South, and this year again yours are outstanding ahead in every way of those received from others. Both years your bees have been noticeably gentle, non-swarmling, and great honey-gatherers." (Name on request.)

FRANK BORNHOFFER

MT. WASHINGTON, OHIO.

When You Want

quality, disease-resisting, and honey-gatherers why not Root's strain that has been tested out for over 50 years? I am prepared to take care of your wants. Small or large orders will receive my prompt attention. Quality, service and satisfaction is my motto. Remember you get what you order with a guarantee backed by years of experience.

PRICES TO JULY 1.

Untested Queens, 1, \$1.25, 12, \$13.80, 100 \$90.00. Select Untested, 1, \$1.60. Tested, 1, \$2.00. Select Tested, \$2.40.

After July 1, 10% discount.

Write for circular.

A. J. PINARD

440 North 6th Street, SAN JOSE, CALIF.

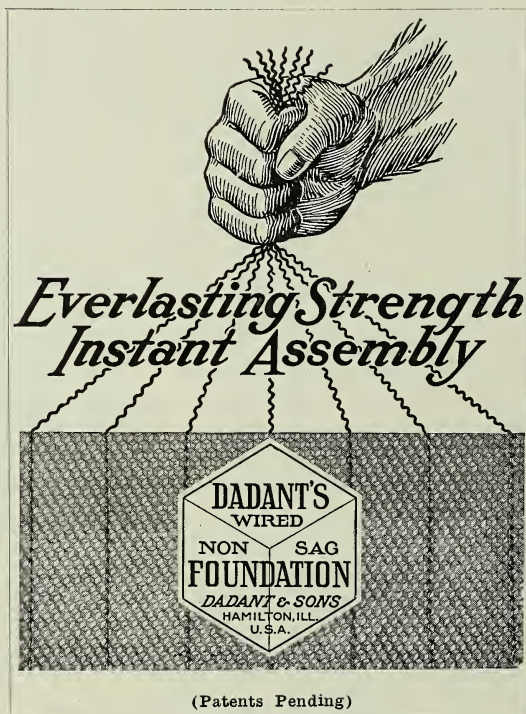
---Non-Sag---

Reinforced Foundation

A Real Success at Last

Makes
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Worker
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Cuts Out
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and Labor
of
Hand
Wiring



Quickly
Accepted
by Bees
Without
Reservation

The
Finished
Comb
a Delight
to
the Eye

(Patents Pending)

TESTED BY TIME AND USE. Dadant's Wired Foundation is not an experiment of a few months' time, but it is a carefully evolved specialty of a life-time of foundation specialists. It has also been thoroughly tested for several years in large apiaries in all parts of the United States.

ITS USERS ARE ENTHUSIASTS. We have dozens of statements like the following:

"I have tried Wired Foundation this year under the same conditions with foundation wired horizontally. Every frame of the old style foundation sagged badly but the Wired Foundation made perfect combs. I have 75 big hives in use now and not a comb in a single one of them is anywhere near as perfect as those I have had drawn from Wired Foundation. I call it the greatest improvement modern beekeeping has had for many years."

PORTER C. WARD, Allenville, Kentucky.

DADANT'S WIRED FOUNDATION may be used in new style split bottombar frames or in the old style one-piece bottombar frames with equal satisfaction. It is also adaptable to any size and style of brood or extracting frame.

COSTS NO MORE. Since Dadant's Wired Foundation cuts out the cost and labor of wiring, its extra price of three cents per pound above the catalog prices of old-style foundation is thus more than returned to the beekeeper.

ASK FOR SAMPLES. A small mailing sample sent free on request. A sample of seven sheets, for either split bottombar or old-style one-piece bottombar frames, will be sent, postpaid, to any address in the United States for \$1.00. Specify size desired.

DADANT & SONS HAMILTON, ILLINOIS

Catalog and Prices on Foundation, Bee Supplies, Beeswax, Wax Working Into Comb Foundation and Comb Rendering, for the asking.

GLEANINGS IN BEE CULTURE

APRIL, 1922

EDITORIAL

OUR "Just News" department is crowded out of this issue by exceptional demands on our space. It



Several Important News Items.

is only because of this fact that we do not give a full report of the incorporating of the Empire State Honey Marketing Co-Operative Association at Syracuse, N. Y., on Feb. 24, backed by a large number of the leading honey producers of New York State.

Other beekeeping news items of importance that we wish we could give more extended notice are: The short course in beekeeping at the Connecticut Agricultural College, April 11 to April 21, given by L. B. Crandall, bee specialist in the extension service; the releasing of a moving picture film, "Bees—How They Live and Work," by the U. S. Department of Agriculture; and a very favorable report on Hubam clover issued by the Iowa Experiment Station.

A BEEKEEPER in a fruit-growing district writes that his colonies were badly injured



The Spray Poison Evil.

last year by spray poisoning, some of his strong two-story colonies being reduced to mere nuclei just at the time they should have been building up most rapidly for the honey flow. His letter is typical of dozens of others making similar complaint. In some cases what the beekeeper thought to be depletion by spray poisoning, on investigation turns out to be European foul brood, but there are plenty of instances of great damage to bees through carelessness or utter disregard of the interests of the beekeeper on the part of fruit-growers. Several have asked whether it is advisable to shut the bees into their hives or put them into a cellar at spraying time. The Editor would be inclined to move the bees away from orchards where the trees are sprayed while in bloom. If all the bees were moved to safe locations, the orchardist would, no doubt, soon be willing to pay the beekeeper to return the bees to the vicinity of the orchard, to insure better pollination. For this kind of service the beekeeper is justified in asking a liberal price. See in this issue the articles, "Wonder Work of Bees" and "Beekeeping and Agriculture."

Gleanings is prepared to furnish printed

cards calling attention to the value of bees in fruit-growing and directions for spraying without injuring the bees. These will be furnished free, upon request, to our subscribers who desire to distribute them among their fruit-growing neighbors.



IN MANY cases, no doubt, the necessity of making out an income tax report has been



The Income Tax and Beekeeping.

a blessing in disguise to beekeepers and farmers, for it has compelled them to keep accounts in their business. Keeping careful accounts of all costs and sales is a prime necessity in any business, especially so today when the margin of profit, if any, is small and when the balance is too often on the wrong side of the ledger unless great care is taken to hold down the costs of production and selling. Those who have not heretofore kept careful records of all the costs entering into the production and handling of their crops of honey should by all means begin this at once. It is not necessary for the beekeeper to be an expert accountant. His problems of accounting are greatly simplified by a careful study of the various forms sent out by the Internal Revenue Department for income tax purposes. If a record is made of every item of expense connected with the production of honey, it should not be difficult to make up a balance sheet at the end of the year.

While no charge for labor on the part of the owner or members of his family is permitted in the income tax report, for business reasons a careful record of all the labor should be kept.

The time and expense which go into the care of the colonies throughout the year, representing the fixed expenses, should be kept separate wherever possible from those incident to securing the crop such as supering, taking off the honey, extracting, packing and selling, which vary according to the size of the crop. When such records are kept over a period of years it becomes possible to determine what it costs to operate the bees in a given locality. This forms a basis for figuring how many pounds per colony must be secured to pay expenses. A compilation of such data for various parts of the country would be of great value. The Michigan Agricultural College is now obtaining such

data for Michigan, the project being under the joint control of the Departments of Entomology and Farm Management. Michigan beekeepers who are willing to assist in this can secure from the college at East Lansing, a pad of accounting sheets and inventory blanks, which are designed to simplify the beekeepers' cost-accounting.



SINCE the discovery of the cause of the Isle of Wight disease by Dr. John Rennie



Prohibiting Importation of Bees and Queens.

and his associates, as announced late in 1920, certain things have developed to

cause American beekeepers considerable concern.

Last summer the Bureau of Entomology called for samples of sick bees which might be suspected of having this malady. Samples were sent from all parts of the country, but none of them were infested with the parasitic mite which causes the Isle of Wight disease. While this does not prove that these mites do not exist in this country, it certainly is strong evidence that they do not.

Last summer a sample of live bees, taken from a colony suffering from Isle of Wight disease in Scotland, was sent to the Bureau of Entomology at Washington. The mites were alive when these bees were received at the Bee Culture Laboratory, thus demonstrating that these parasitic mites can easily be transported by bees shipped into this country from Europe.

While Isle of Wight disease was originally supposed to be confined to the British Isles, it has recently been discovered in the French Alps. Remembering the rapid spread of this disease from the Isle of Wight, where it was first observed in 1904, to all parts of Great Britain, its discovery now in the French Alps is certainly cause for alarm. In the light of these developments the subject was taken up at the meeting of the Apiculture Section of the Association of Economic Entomology, held in Toronto in December. A committee was appointed to plan some measure to prevent the introduction of this disease into the United States and Canada, this committee being composed of Dr. S. B. Fracker, State Entomologist of Wisconsin; Prof. Geo. H. Rea, Pennsylvania State College; and C. B. Gooderman, Dominion Apiarist of Canada. A conference of entomologists and inspectors was called by Dr. Fracker on March 9 at the Bee Culture Laboratory of the Bureau of Entomology at Washington, where it was decided inadvisable to apply any means of regulation as to the importation of bees and queens and that nothing short of absolute prohibition of further importations would meet the situation.

Following is a report of the action taken at this meeting:

Serious ravages causing almost complete destruction of the beekeeping industry in portions of Europe by the "Isle of Wight" disease have start-

ed determined action by American beekeepers to save their business from similar losses.

"Isle of Wight" disease is caused by a parasitic mite in adult bees and is easily transported by bees shipped from Europe to America, as was proved during the past summer when live bees carrying living mites arrived in Washington from Scotland. Should this disease become established in America, beekeepers, queen-breeders and manufacturers of bee supplies would quickly be ruined and horticultural interests would be seriously damaged.

A meeting was called at the Bee Culture Laboratory in charge of Dr. E. F. Phillips of the Bureau of Entomology at Washington, D. C., March 9, which was attended by specialists from several states and Canada who are interested in measures to prevent the introduction of the "Isle of Wight" disease into the United States and Canada.

Among those at the meeting were Dr. L. O. Howard and Dr. C. L. Marlatt, Chief and Assistant Chief of the U. S. Bureau of Entomology; Dr. E. F. Phillips, Government Apiarist; Prof. F. E. Millen, Apiary Inspector for Ontario, Canada; Prof. Geo. H. Rea, Pennsylvania State College; E. G. Carr, Apiary Inspector of New Jersey; J. G. Sanders, Harrisburg, Pennsylvania, President of the American Association of Economic Entomologists; Prof. N. E. Phillips, Massachusetts Agricultural College; and Dr. H. E. Ewing, Expert on Mites, of the U. S. Bureau of Entomology.

The meeting decided to recommend that the U. S. Post Office Department shall at once prohibit the introduction of queen bees through the mails from all foreign countries except Canada, and that a bill be introduced into Congress to prohibit the introduction of adult bees into the United States except for experimental and scientific purposes by the U. S. Department of Agriculture. Since there is no known Isle of Wight disease in Canada, and since it is hoped and expected that the Dominion of Canada will establish the same safeguards to the beekeeping industry, it is planned not to establish any quarantines or prohibitions against shipments of bees from and to Canada.

It was the opinion of those in attendance that the Isle of Wight disease is such a serious menace to beekeeping on this continent, that every possible step should be taken to prevent its introduction, and that all importations of queen bees should be stopped. Pending full legislation in this matter, it is hoped that beekeepers through the continent will co-operate, to the fullest degree, by making no attempts to introduce adult bees into the country. Any queen-breeder who introduced this disease into the country would be doing a great damage to the beekeeping industry, and it would be a serious drawback to his future business.

The committee urges that beekeepers who see any outbreak of any disease of adult bees shall at once send samples for examination and diagnosis to the Bureau of Entomology, Washington, D. C. More detailed information concerning this disease will be presented in a future issue of this journal and in the meantime information may be obtained by writing to the Department of Agriculture, Washington, D. C., for a copy of Department Circular 218, entitled, "The Occurrence of Diseases of Adult Bees," which circular is for free distribution.

Signed by Committee.

J. G. Sanders, Harrisburg, Pa., Chairman.

E. G. Carr, New Jersey.

F. Eric Millen, Guelph, Canada.

Those who have imported any bees or queens from Italy or from any other foreign country, should watch their colonies for any indications of this disease, and, if any such are found, samples of sick bees should be sent to the Bureau of Entomology at Washington for examination. If it should be discovered that the Isle of Wight disease has already been brought to this country, the colonies should be found and immediately destroyed. No chances should be taken in such an important matter.

HOW many OUTSIDE OBSERVATIONS

in our profession are diligent enough in taking notice of what transpires about the apiary and about the hive entrance? A bee-

keeper who has cultivated a trait of keen observation is indeed fortunate. When we leave home for an outyard do we look straight ahead and permit our thoughts to ponder over our probable crop or prices for honey, or do we observe the bloom along the roadside, and record that visited by bees, the number of bees noted on the bloom, what they are gathering, the time of day, etc.? If we are observant we might catch a "line of flight" as we travel along. The line of flight is worth studying. Are they our bees? If in doubt, it might pay us to follow up, if only to discover that someone had jumped our location and placed an apiary but a few hundred feet from our own. It is not a bad idea to become acquainted with the bees in our vicinity. Moreover, on some ideal bee day during April we might spy a swarm along the roadside. In other words, be a keen observer and let crop and honey prices take care of themselves.

Observations About the Apiary.

Upon arrival at a yard at the busy season of the year, it is a great temptation to light the smoker at once and start right in on a row of colonies. This is an unwise procedure under any circumstances.

Watching the Flight of Bees.

The first thing we do is to watch bee activity, and we walk about the yard and mark the direction in which the bees are going. (In all our observations we take particular note of the time of day.) By studying their line of flight a few moments we can judge fairly well, taking into consideration several factors such as climate, time of day and year, etc., whether the colonies are (1) wearing themselves out, (2) making a living or (3) storing a surplus. (1) When but a few bees are flying in almost any direction and with no marked line of flight, they fly "wild" and are known as searching or prospecting bees. There is then no incoming nectar and, if some colonies are to be manipulated, precaution against robbing must be resorted to on the very first hive opened. (2) A fair amount of general activity about the colonies with a marked line of flight, and with the intake of nectar balancing the consumption of stores, protection against robbing is likewise in order. (3) The line of flight is well marked, even in two or more directions. The flight is swifter and lastly the tone of the bees is very audible. In fact, upon just reaching the apiary and just after the motor has been stopped, we know whether or not the

Significance of What the Bees Do as Seen in External Examinations Before Hives Are Opened

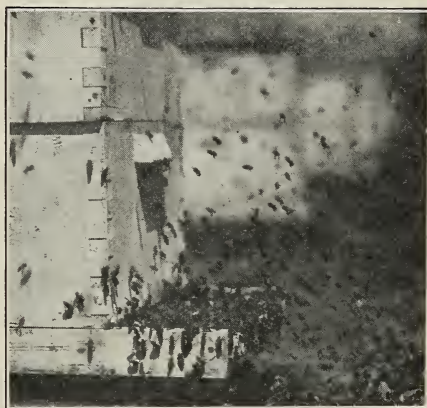
By M. C. Richter

subject will be discussed later.

Mean Bees About the Yard.

Another thing we notice upon entering the yard is whether the bees seem unduly cross. If we have some hybrid stock we take it into consideration. However, if the bees seem unusually mean we look for an overturned colony, and not finding any we will "try" several tops to ascertain whether or not they are "tight," for perhaps some colonies have been manipulated

bees are storing a surplus. The line of flight helps to determine what the bees are doing, but hive-entrance observations are just as important. This



Swarm returning to parent colony. The general direction of flight is towards the hive, and the bees are rapidly alighting at the entrance, setting up their "call" for their sisters to follow.

during our absence. If the tops be in order we look for skunk tracks. Another cause for meanness could be attributed to the shutting-off abruptly of a honey flow. It might be added that pure Cyprians confine their stinging to the hive, and that crosses show a most vindictive character for weeks after manipulation.

Looking for Swarms.

We almost always look for swarms about the apiary and after several seasons learn to know their favorite clustering places. It is a characteristic of black bees to cluster higher than Italians. We never take it for granted that we know the condition of our bees to the extent that they won't swarm on a certain day. Surprises are very apt to occur; but, granted that no swarms have issued, it often happens that outside swarms are attracted to the apiary and cluster near by. Aside from natural swarming there are found, but only in poor bee-keeping practice, hunger and disease swarms. In treating for American foul

brood, it is advisable to have an excluder between the bottom-board and brood-chamber so that the shaken bees have no opportunity to abscond. A heat swarm is of rare occurrence and is encountered only in a

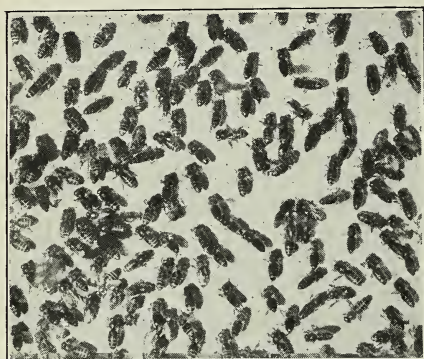
up occasionally and survey the apiary for issuing swarms. Many a swarm has disappeared in just such fashion.

Observations at the Colony Entrance.

Having made the observations about the apiary, which seldom take longer than two or three minutes unless swarms be encountered, we next place our attention upon the hive entrances. It is surprising, the amount of valuable information that may be gathered from a study of the entrance to a bee's home. The beekeeper detective can find any amount of evidence at the threshold of a colony, and the more observant he becomes, the greater are the number of clues which he picks up.

The act of (1) swarming is at once distinguishable by the "pouring out" at the entrance and by the way in which bees fill the air in their circular flying. After a swarm has issued we notice, on the alighting-board and adjacent thereto, the very young hairy bees that were unable to take wing with the swarm. Their presence furnishes us with a clue, which tells us that the colony examined has cast a swarm.

On the (2) return of a swarm we may find a disabled queen about the entrance. She may be clipped, wing-frayed, feeble or too heavy to fly. We examine next the entrance for signs of queenlessness (see "6") and, if such examination confirms our suspicion, we know that the swarm has returned to the hive. When (3) young bees take wing for the first time, which usually occurs just after the noon hour, they do so in a sort of an up and down movement facing the hive entrance. Gradually they increase their radius of flight, apparently marking all the while the spot where their home stands. A little study of this activity



Entrance (alighting-board) to colony shown in previous cut. A true type of leather-colored Italians, lined up in front of their home, abdomens slightly elevated, fanning at a speed faster than one thousand per second (photo taken at speed of one-thousandth of a second) and exuding and driving away their scent, which emanates from a gland (visible in picture) situated between the seventh and eighth terga of the abdomen.

very hot dry spell. When such excessive weather prevails (115°F. in the shade) bees will leave their homes in some instances and cluster on trees. While on the subject of swarms, it might be mentioned that it is an excellent idea to set out several decoy hives about each yard.

One other point: Do not become so engrossed in your colony manipulations throughout the day that you forget to look



Immense swarm taking possession of a decoy hive.

will at once contrast itself with the flight of the (4) incoming honey gatherers. The latter do not tarry about the entrance, as do the young bees, but soon drop on the alighting-board and disappear within. The outgoing honey gatherers leave the hive like a shot and soon vanish from sight. (5) The pollen-laden bees are indicative of breeding. When little or no pollen is carried into a certain colony, as contrasted with a considerable amount of pollen-bearers entering most other colonies, it is a sign of either a failing queen or queenlessness in the former. (6) Queenlessness means restlessness, intermittent fanning of wings of some of the bees and a running about, along the hive entrance, over side walls of the hive, and even on the ground, in search of their queen.



Young bees learning to fly at 1 p. m. They mark their location, facing the hives, and widen their flight radius as may be observed by the photo.

In (7) laying-worker and drone-laying colonies as well as queenless colonies there is a certain amount of apathy towards work as contrasted with normal colonies. Normal colonies have their guards, ventilators, incoming and outgoing bees, etc., performing their tasks regularly but in "6" and "7" we see little groups of bees idling away their time, as it were, and the general inactivity of such colonies is at once noticeable.

Unusually agitated or excited bees, with no other apparent reason for such condition, may be attributed to the (8) mating of a virgin queen, to the process of (9) feeding, and to the (10) balling of a queen. From the time that a virgin queen leaves a colony until a short time after she returns, there is usually an undue amount of agitation about the entrance; soon after bees are fed there is a decided "investigative turn of mind" at the entrance; and in "10," if we do not see a knot of bees at the en-

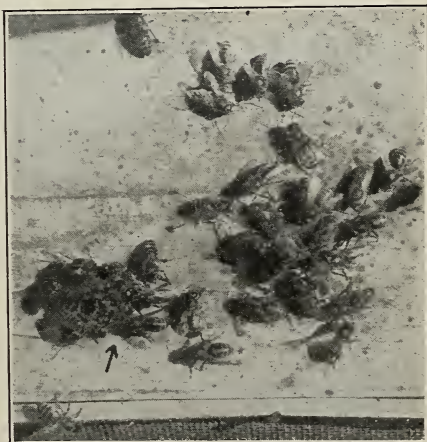
trance or on the ground, the "ball" is likely to be found on the floor-board. Balling of queens is very rare when colonies are not manipulated and may be due to bad weather, or the abrupt stoppage of a honey flow, and is confined, as far as we know, to the black race of bees.



View of colony entrance during a honey flow. The heavily laden bees, some carrying pollen, are alighting slowly at the entrance.

When we see (11) drones flying for the first time in spring, we know that almost any day thereafter virgin queens are liable to emerge. This is a valuable observation, as it is an indication that treatment for swarming is in order. We must all know that (12) expulsion of drones indicates that the honey flow is over. When we notice, however, that some colonies tolerate drones several weeks after most colonies have expelled their male inhabitants, we know that we have colonies that are either (13) supersedure ones, or that they are queenless, laying-worker or drone-laying colonies. Dead queens before colony entrances may be attributed to supersedure, if she be a worn-out queen; to a balled queen when she shows the effects of much abuse (it is practically impossible, however, to distinguish between the two); and if there be one or more virgins or immature queens, to swarming.

The bees (14) fanning at the entrance are the ventilators of the hive and ripeners



Expelling from and hindering the entrance of drones into the hive after a honey flow.

of honey. A study of their activities will soon show how much ventilation and ripening are taking place. During honey flows these two processes go hand in hand, and in the evenings, this evaporation practice, indicated by the roar of the bees, is an excellent indication, to one who is familiar with this phenomenon, of the amount of surplus stored during the day. Bees fanning in very hot weather, and when there is usually no honey flow, should never be molested. A normal colony can maintain a cooler temperature within than that which exists without the hive, but if either smoked or opened during such a hot spell, it may never be able to regain the necessary colony temperature which prevents the burr and brace combs in the upper story from melting. Melt-downs originate in just this manner. The phenomenon of (15) clustering outside the hive may be due to excessive heat, to a preponderance of honey gatherers at a time when there is no nectar secretion, or to a honey-bound condition within the colony. Occasionally upon the return of a swarm, all or a part may cluster without. The action of (16) robbers is, we are sure, understood by all of us and this propensity of the bee need hardly be mentioned. Prevention! Keep everything covered, contract entrances of weak colonies, use a robber tent, or do anything that spells prevention. Above all, never smoke a colony that is being robbed. By so doing, the guards become disorganized and the effect of the smoke upon the robbers is negligible.

In the fall of the year (17) propolizing bees may be confused with robbers. Crevices between supers, and between super and tops are often propolized, and the action of bees during this kind of work often resem-

bles robbers nosing about for an opening. (18) Crumbs of wax strewn about the hive entrance is usually a sign of wholesale robbing. Open up the hive and look for scales of American foul brood. If none are found an expression of relief is surely in order. Otherwise, constant inspection must be resorted to throughout the season. Sometimes bits of wax (cappings) are found about the entrance. Their presence may mean nothing more than the consumption of stores from within, as the removal of stores remote from the cluster to cells surrounding the winter nest is of common occurrence during the inactive season.

Bees affected with (19) paralysis are easily distinguishable about the entrance, and all of us are hoping that the Bureau of Entomology at Washington will soon tell us what we have when we talk about paralysis. Occasionally we see bees carrying (20) out dead larvae or pupae; this act may be caused by acute starvation, chilling of the outer part of brood-nest, or by the brood having become overheated.

The above observations are helpful in colony diagnosis and they can be made doubly advantageous if they be used from a comparative standpoint.

Lastly, after the day's manipulations in the apiary have been concluded, we make it a point to examine carefully the entrances of every colony that has been handled. (If we feel that there is any likelihood that queens may be balled, this observation is made during the day.)

Our purpose in doing this is to observe whether or not the colonies are queen-right, and also to notice how mischievous robbers have become.

Big Sur, Calif.



THE relation of the honeybee to the production of deciduous fruit is a question that interests both the beekeeper and the fruit-grower. In the early days of horticulture nearly every farm kept a few bees as a sideline, but of late years this practice has almost entirely disappeared. The fruit farm with a number of colonies of bees is now the exception rather than the rule. Sporadic attempts have been made from time to time to interest orchardists in general in keeping bees, but almost invariably they have resulted in failure. The orchardist was a fruit-grower and not a beekeeper; hence he soon lost interest when he began to lose swarms and his colonies became diseased. Steadily diminishing crops in many of the highly specialized fruit

WONDER WORK OF BEES

They Make Millions for the Fruit Growers. Bees that Returned to the Orchardist Over \$100 per Colony

By A. H. Hendrickson

College of Agriculture, University of California

sections have caused a widespread interest in anything that will bring up the yield. Attention has been redirected to the humble bee as the connecting

link between trees and fruit.

Actual experiments with honeybees in orchards were carried on over 30 years ago. Professor A. J. Cook, who was our State Commissioner of Horticulture for several years, while stationed at the Michigan Agricultural College, proved the value of bees in apple orchards. He gave substantial figures to back his claims. In 1893, at a California state fruit-growers' convention, several observers reported on the value of bees in their respective districts. As early as 1894 a government report showed that the cherry crop in a large orchard near Vacaville was

greatly increased when several colonies of bees were placed in the orchard. It is interesting to note that this ranch today keeps a large number of bees and produces large crops consistently year after year. Yet on other ranches in the same section where crops were erratic, the owners did not believe that bees were in any way responsible. In spite of this information printed in the reports of the State Commission of Horticulture and hence available to the county commissioners and others, many growers had no conception of the importance of these useful insects. Many ranchers went to the opposite extreme and disposed of their bees, claiming they were a nuisance at drying time and generally hard to care for. In 1916 and 1917 the University of California by means of tents of mosquito netting over prune trees proved conclusively the value of bees in prune orchards. Since that time the use of these insects in the Santa Clara Valley and elsewhere has steadily increased. In 1921 the results of similar experiments demonstrated to the Placer County growers the need of bees for their plums. From interest shown thus far it would seem that this district would be a promising field for an energetic beeman with several hundred colonies to rent.

Process of Fertilization.

Before proceeding further, it would be well to stop and consider briefly what is necessary to secure a set of fruit. The importance of bees is more fully realized when the intricate process of fertilization is understood. Assuming that the orchard has been given normal care, the trees will blossom in a satisfactory manner at the proper time. Each blossom produces one or more pistils, as the case may be; a large number of stamens; a row of showy white or pink petals; and, on the outside, a row of green sepals. The important organs are the first two, the petals being largely for show. The pistil, or female portion, consists of a young fruit in which is located the unfertilized egg, and above which is a rather long slender stalk surmounted by a flattened sticky surface called the stigma. The stamens, or male elements, are long slender filaments bearing the anthers, which enclose large quantities of pollen. Deep down in the flower is usually the nectary which secretes the honey. At the proper time the pollen falls upon the stigma, germinates, and sends down a tube thru the pistil to the egg. The male nucleus passes into the egg and unites with the female nucleus, completing the process of fertilization. Under this stimulus the young fruit develops very rapidly. If the egg is not fertilized in a comparatively short time, it shrivels and the young fruit turns yellow and falls to the ground.

The egg or young ovule remains receptive for perhaps several days, depending somewhat upon the climatic conditions. If not

fertilized during that time it begins to disintegrate and the young fruit is doomed to fall. Many potential fruits are lost each year because the egg was beyond the receptive stage before the pollen tube reached it. Thus, the rate of growth of the pollen tube down the style becomes a very important factor. If the growth is slow, disintegration of the egg may commence before the nucleus can pass over and complete the process of fertilization. Experiments have shown that pollen tubes grow much slower in cold weather than in warm, which may help to account for light crop following cold springs. Pollen tubes also grow much slower in self-pollinated flowers than in cross-pollinated ones. Self-pollinated fruits are those pollinated with the pollen from the same variety. Cross-pollinated fruits are those produced when pollen from another variety is used. This slow growth may be one of the fundamental causes of sterility among deciduous-tree fruits. For full setting it would seem that the ideal conditions would be fairly warm clear weather and ample facilities for cross-pollination, so that a strong, active growth would be secured in the pollen tubes.

In addition to this impediment to self-pollination just described, nature has also provided others which are more obvious. Many fruits like the plum and apple do not have the pistil and stamens maturing at the same time. While the pistil is receptive, the pollen is not yet mature. Consequently pollen from another variety must be placed on the pistil to secure fertilization. Another factor is the one of difference in length of the important organs. In certain varieties of almonds, cherries and plums the pistil is so much longer than the stamens that there is no possibility of the pollen dropping on the stigma. An exception to this rule seems to be the apricot and possibly the peach. With but few exceptions the pollen must be transferred mechanically to the stigma of the same or different flowers. Insects and wind are the only two distributing agents worthy of mention. For practically all of our tree fruits except walnuts, wind as a pollen carrier may be considered as practically negligible in value. Insects are the effective pollen carriers. No one knows exactly of what importance each one is, but the honeybee is usually considered the most valuable. Increased crops, due to the addition of bees to the orchard, is ample proof of this statement.

Fruits Requiring Cross-Fertilization.

Bees are a vital necessity with many varieties of fruits, and are very helpful with nearly all others. Among the fruits which are benefited by bees are almonds, apples, cherries, pears, plums and prunes. Shy bearing in almonds, for a time attributed to cold weather and similar causes, is largely due to lack of cross-pollination. In bulletin

306. of the University of California, Professor Tufts has shown that all varieties of almonds are self-sterile. He recommends interplanting proper varieties and the use of one colony of bees per acre. In bulletin 307 he makes the same recommendation for pears. In various parts of the United States apples have been greatly aided in setting crop with bees, because so many varieties of the fruit are self-sterile. Likewise, cherry varieties, as shown by work in Oregon, Idaho and California, are all self-sterile. The writer has observed many demonstrations of the value of bees in cherry orchards where there was formerly almost no crop. Japanese plums are likewise self-sterile with but few exceptions and are in great need of effective cross-pollination. The same is true of most European plums. Among prunes two well-known varieties are self-sterile and two are self-fertile. The results, as reported in bulletin 294 of the California Experiment Station, show that the Imperial prune, long notorious as a shy bearer, is wonderfully benefited by bees; and even the French prune, long known as a consistent bearer, is caused to produce larger crops by these same insects. In other sections bees are helpful in producing different crops. It is reported that cranberry yields are greatly increased by the use of bees, and their importance in growing tomatoes and cucumbers under glass is well known.

On the other hand apricots, according to some observers, are pollinated with their own pollen before or soon after the blossom opens. It is also known that they are self-fertile and able to set fruit with their own pollen. Whether bees would aid this fruit or not is a question that has not been answered as yet. The same situation exists with many varieties of peaches. The flower is so constructed that self-pollination may take place easily. The writer has also observed that the peach flowers are very attractive to bees and are visited by them in great numbers. What effect the work of bees may have on this fruit is not known; but most certainly there seems little cause for worry, as great plantings of a single variety of this fruit are known to produce regularly and abundantly.

The importance of the element of time, as previously mentioned in pollination of flowers, cannot be overestimated. Distribution of pollen for a given variety must be made in a very few days. If delayed, lack of set may result for the reason already explained. It is in this case that the bee is especially valuable. Other insects might succeed in visiting every flower if given time enough; but the bees, due to their untiring efforts, seem to accomplish this work in the shortest possible time. The consequent mixing and distribution of pollen, as soon as the pistil is ready to receive it, is the thing that makes for big production. Large numbers of bees are needed in cloudy

or wet and rainy seasons where every hour of sunshine counts.

Preference Shown by Bees.

Bees have preference for particular varieties. Some kinds are accepted until others open, when the former are deserted. There are not many data on this point, and it is of more concern to the grower than to the beekeeper. It has been reported that in some sections bees have been observed to desert cherries for apples. In my own experience I have observed that early Japanese plums are not visited as frequently as the later varieties. For example, Formosa and Gaviota are both shunned when the European kinds begin to open. Scanty production of pollen and honey in these two varieties may be the cause. Bees are said to work satisfactorily on strawberries and are especially fond of raspberries. In California, because of their long blooming season, the latter fruits are of considerable value as honey plants.

Some growers have their own bees, but most prefer to rent for the season. The rental is usually made with the understanding that the owner is to place the bees where desired and to remove them promptly after blossoming season in order not to interfere with other orchard operations. The best method of distribution is to place the hives singly throughout the orchard. This method insures a more even set of fruit than is the case where 10 or 20 colonies are all put in one place. It is also well to put the hives near the center of the orchard, so the bees will work near at home as much as possible. The average grower is not altruistic to the extent of paying for an increase in his neighbor's crop. Ordinarily about one hive to the acre should be sufficient, although excellent results have been obtained when fewer were used.

Increased Yield Due to Bees.

Noticeable increases in yield have invariably followed the use of bees. What these increases are in actual figures is hard to secure. The average grower knows he harvested a larger crop than he did before, and that is about all. One or two examples, however, will suffice. In 1916 one grower with 180 acres of prunes produced 344 tons of dried fruit. The following year when 115 colonies of bees were used the crop was 432 tons, an increase of nearly 100 tons. Another grower on seven acres of cherries with 17 tons in 1918 raised his yield to 52 tons in 1920 and to 49 tons in 1921 by the use of 10 colonies. Other growers have undoubtedly had similar experience elsewhere.

Quality of Cross-Fertilized Fruit.

With most of stone fruits there is no outward sign showing whether the fruit has been properly fertilized or not. If the fruit matures and ripens it is usually considered to have been fertilized, altho no one ever thinks of cracking the pit to see if the ker-

nel is developed or not. In our experiments plums which were self-pollinated by hand showed no difference in size, shape or quality from those cross-pollinated. The plant breeder would be interested in determining how seeds would germinate and grow from the various combinations. The grower, however, is satisfied when the fruit remains on the tree to maturity. With apples and pears the case is somewhat different. Instead of one pistil to each flower there are five. All five must be pollinated and the respective eggs fertilized to secure a perfect fruit. Very often, due to lack of pollination, only three of the five carpels or divisions in the core of the apple have perfect seeds, while the other two have not. The fully developed portion of the fruit corresponds with the side having the perfect seeds. The Cornell Experiment Station has shown a direct relation between the number of seeds in an apple and the percentage of June drop. This drop always consists of the fruits having the smallest number of seeds. In other words the larger the number of seeds, the better the chances for that fruit to remain on the tree until mature.

In California where Bartlett pears are grown extensively, a great portion of the fruit is found to be practically seedless and coreless. For reasons as yet unexplained this pear under our conditions is seemingly able to set and mature fruit whether it contains seeds or not. The seedless quality of this variety, it is argued, constitutes a distinct advantage, as the core is much smaller and the flesh is not so gritty. These factors are advantageous to the canner and grower where the product is consumed soon after picking. In the demand for a long-keeping pear, however, some interesting points have been developed in this connection. The University of California has recently shown that the Bartlett pear with perfect seeds keeps from two to three weeks, or more, longer than the seedless ones picked at the same time. The advantage of cross-pollination for producing a long-keeping pear is obvious.

Injury Caused by Bees.

The average grower in general has two grievances against the bee. One is the attacking and injuring ripe fruit on the trees and in the dry yard, and the other is in the spread of certain diseases, notably pear blight. Usually the sight of several bees gathered around a split or puncture in a ripe fruit is enough to cause the grower to want to rid the entire countryside of these obnoxious visitors. The benefits received during the blossoming season a few months previous are entirely forgotten. It has been demonstrated that bees are not the primary cause of injured fruit. The first damage is usually done by birds or insects which have piercing mouth parts. The honeybee comes along later and gets the blame. Actually the damage, if any, started by bees is so slight as to be practically negligible.

With pear blight the case against the honeybee is somewhat stronger. Experiments have shown that bees do carry blight, and that the blight organism remains alive in the hives for several weeks after it has been brought there. However, to my knowledge it has never been definitely proved that bees prefer the sticky exudate of the blight canker to the honey in the blossom when the latter is available. It may be that the blight organism is picked up accidentally and thus transferred to the blossoms. Because of its size the honeybee seems to be the most frequent visitor to pear trees, and hence is judged guilty of doing all of the harm. As a matter of fact other insects, such as thrips, aphids, ants and beetles of various kinds are as guilty as the bee. If they were not, how is blight in young twigs and on young trees without blossoms explained? The solution to this difficulty is to use more care in removing old hold-over cankers which form sources of infection. The honeybee must be given credit for performing so faithfully the function of distributing pollen, and should be relieved of the stigma of being the chief carrier of blight, and a general nuisance at harvest time.



SOME one has said that the only way by which one can honestly gain a living by stealing is to keep bees. These industrious little workers pay no attention to line fences or land ownership, but roam freely over neighboring fields, gathering nectar from other peoples' flowers and carrying it home to make into honey, which enriches the owner of the bees in-

BEEKEEPING AND AGRICULTURE

Honeybees of Great Value in the Pollination of Certain Field Crops as Well as Fruit

By Geo. S. Demuth

stead of the owner of the land.

Just what are the bees carrying away from the neighboring farms when they bring their loads of nectar? The

chemist explains that it is chiefly sugar and water. He further explains that sugar is a carbohydrate, so called because it is composed of carbon, hydrogen and oxygen, the hydrogen and oxygen being in the same pro-

portion as in water. Plants are able to combine these elements in such a manner that sugar and other carbohydrates are formed.

Where Does Nectar Come From?

Who owns the carbon and the water from which the plant elaborates the nectar, which the bee carries away across line fences? The carbon is taken from the air where it exists in the form of carbon dioxide, and the water is carried to the farm on the wings of the wind from ocean, lakes and ponds or wherever the air can pick it up by evaporation, except in arid regions where it is carried to the farm in irrigation ditches. These elements, from which honey is made, also disregard line fences and land ownership, roaming freely over the earth. The carbon of the atmosphere and the rain come alike "on the just and on the unjust." Ownership of either of these would be difficult to establish.

When the miner takes out of the earth coal, iron or oil he is depleting the resources of the country. The fisherman and the lumberman destroy instead of create resources. The manufacturer is usually a consumer of the world's resources in manufacturing his product. Commerce does not create resources but only trades in them. Agriculture is practically alone among the industries as a creator instead of destroyer of resources. But even the farmer is, to a certain extent, a miner of the soil, for when he hauls certain crops from his farm he is hauling away a portion of the wealth of the land.

Production of Nectar Does Not Deplete Soil.

The beekeeper, being a producer of an almost pure carbohydrate, takes practically nothing from the soil, the amount of ash in honey being almost negligible. When he ships his crop to market he is shipping away material derived from air and water. No matter how many carloads or trainloads of honey are shipped out of a state, the resources of the state are not touched by its removal. Water and air can come back from beyond state borders, if need be, to replace that which was taken away in the elaboration of the nectar from which the honey was made. By nature's wonderful magic, the world's supply of carbon and water is not used up by the continued elaboration of sugar, for these are only borrowed until the honey is consumed, when they go back to the great reservoir whence they came. The cycle of carbon in nature and the part it plays in plant and animal life is one of the wonderful romances which science has to tell to those who care to hear.

Bees Usually Pay Well for What They Take.

But in taking the nectar which the plant has appropriated from the air and passing clouds, the honeybee in many cases renders a service to the plant, and therefore to the owner of the plant, which is of greater value, measured by human standards, than the value of the nectar. Much has been written

about the pollination of fruit and the relation of bees to horticulture. In 1909 Dr. E. F. Phillips wrote in the U. S. Department of Agriculture Bulletin No. 75, Part VI, as follows:

Fruit-growers, as a rule, recognize the value of the honeybee to their industry. Taking into consideration the insurance of pollination by transporting colonies of bees to places where their services are needed, it is safe to say that the indirect benefit of the beekeeping industry annually adds to the resources of the country considerably more than the amount received from the sale of honey and wax.

Much has been learned in regard to the value of the honeybee in cross-pollination since 1909, and no doubt a revised statement by the same author for 1922 would be much stronger.

At the short course for beekeepers at Berkeley, Cal., in December, Prof. A. L. Hendrickson, in charge of deciduous fruit investigations of the Agricultural Experiment Station, University of California, gave some striking figures on increased yields due to bees. In one case a grower, with 180 acres of prunes, increased the yield of prunes nearly 100 tons above previous yields by having a beekeeper put 115 colonies of bees in the orchard during the period of bloom. The prunes were sold at \$120 per ton, so the extra yield gave a gross return of \$12,000, or more than \$100 for each colony of bees used. For this service the beekeeper was paid \$3.00 per colony, or \$345.00.

It is not necessary to discuss here the value of bees to the grower of apples, cherries, pears, plums, prunes, almonds, berries of various kinds, cucumbers, beans and other insect-pollinated fruits and vegetables, for the value of bees to horticulture is already well discussed in the beekeeping literature. But it may be well to mention here some of the studies that have been made recently on the pollination of certain field crops.

Pollination of Coffee.

In 1911 the United Planters' Association of southern India asked the government to pass some rules prohibiting the destruction of bees in the coffee-planting districts, on account of a reduction in the coffee crops, evidently brought about by the regular destruction of bees in certain districts. As a result of this the Department of Agriculture at Madras made a careful study of the fertilization of coffee. Results of this investigation were published in 1915, in Vol. IV, Bulletin No. 69, Department of Agriculture, Madras, which contains the following summary:

The presence of bees is not essential for the successful pollination of coffee, but the natural, and therefore most desirable, form of pollination is achieved by the aid of flower-visiting insects of which bees are the most important.

In this case the giant bee of India (*Apis dorsata*) is mentioned as the species referred to, and recommendations are given for increasing the numbers of these bees in the coffee districts in order to increase the coffee crops.

Tower, in Porto Rico Circular 13, calls attention to the value of the common honeybee to coffee-growers in cross-pollinating coffee, especially in seasons when there is considerable rain at blossoming time.

Pollination of Buckwheat.

In Farmers' Bulletin 1062, U. S. Department of Agriculture, Clyde E. Leighty, Agronomist in Charge of Eastern Wheat Investigations, has the following to say on the pollination of buckwheat:

Commercial beekeeping in buckwheat-growing sections is advisable, as bees can make use of the flowers produced and may in turn be of use in fertilizing the flowers. Many buckwheat-growers, in fact, believe that the weight per bushel of the seed is heavier where the crop has been worked largely by the bees.

Pollination of Alsike Clover.

It has long been recognized that the honeybee is the most important agent in the fertilization of alsike clover, though actual figures showing their value to the grower of alsike clover seed are by no means plentiful.

Dr. Ernest Kohn made some observations on this subject in the alsike clover seed-producing district of northwestern Ohio in 1919, which were recorded in this journal in April, 1920, as follows:

I have made a complete survey of the township and got all the information from threshers and other sources, concerning about 80 square miles, giving the location of bees, with number of colonies, and the location of alsike clover fields with acreage and yields.

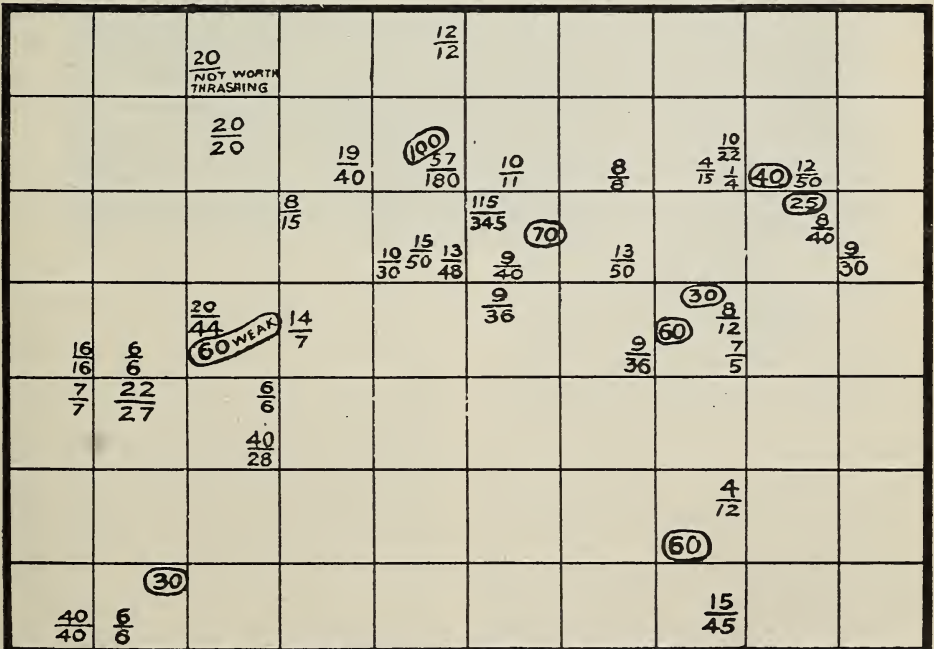
The accompanying map shows in circles the loca-

tion of bees, with the number of colonies. The numerator of the fractions represents the number of acres of alsike, and the denominator denotes the number of bushels threshed. The yield was not heavy at any place, as drought shortened the nectar flow at least three weeks. It will be noticed, however, that near a large number of colonies the yield is three to four bushels per acre, while two miles or more from bees the yield is not more than one bushel per acre. * * * The farmers near the bees received more cash per acre from the seed than they did from any other crop produced, and at the same time they were storing fertility in their soil.

No doubt the honeybee is responsible for most of the alsike clover seed produced in this country; for, as Dr. Kohn explains elsewhere in this article, the fields of alsike clover more than two miles from bees were not worth threshing.

Pollination of Red Clover.

Red clover, which is known to be practically self-sterile making it necessary that pollen come from a separate plant in order to effect fertilization, was long thought to be pollinated by bumblebees only, but beekeepers have for years noted some evidence that the honeybee is an important agent in the pollination of this plant. Practically every year I have found the bees working freely on red clover blossoms in the vicinity of my apiaries in Indiana not only on the second crop but on the first crop as well. When the weather was dry and otherwise favorable for nectar-secretion I have seen fully as many honeybees working on the first crop of red clover during a heavy honey flow as on white clover and alsike clover.



Whenever this has happened the heads which were permitted to ripen from the first crop contained 30 or more seeds each and often as many as 50, so a seed crop could have been taken from the first cutting. Only an occasional bumblebee could be seen working on the blossoms of the first crop while there were thousands of honeybees. In this locality the second crop of red clover sometimes enables the bees to store a surplus after white and alsike clovers have ceased blooming.

Where red clover is grown for seed in Idaho, the seed crop is taken from the first cutting instead of from the second as is usual in the East. No doubt the abundance of honeybees there helps to make this possible, for at the time of the first bloom bumblebees could not yet be sufficiently abundant.

A study of the pollination of red clover, made by the United States Department of Agriculture and reported in Bulletin No. 289,

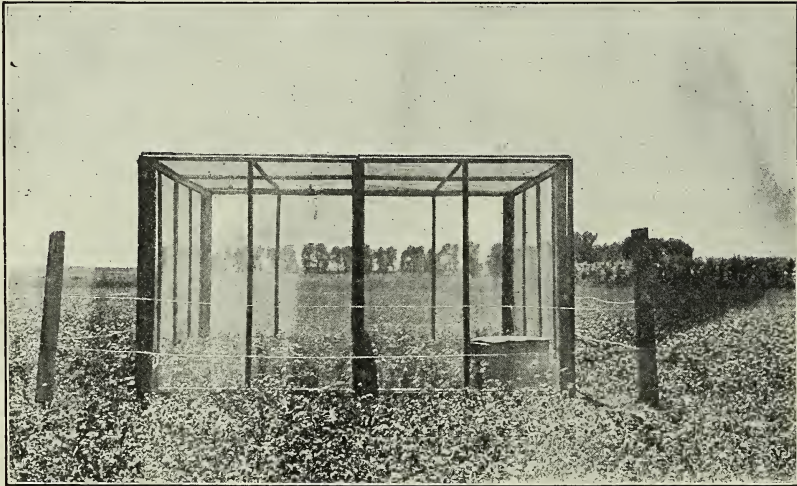
worked on flowers outside, some could always be seen at work on the clover within the cage. Bees working on the clover within the cage were observed to collect pollen from the flowers and carry it to the hive.

As soon as all the flowers in the cage were mature, an area 4 feet square was measured off and all heads within this area were collected, kept separate, and thrashed by hand. Of the 623 heads collected from this area an average of 37.2 seeds per head was obtained.

The higher yield of seed obtained in the honeybee cage than in the bumblebee cage may be attributed, at least in part, to the larger number of bees which had access to this clover. However, the ratio of honeybees to bumblebees was no greater in the cages than in the clover fields in the vicinity of Ames in 1911.

In the summary of this bulletin the authors say:

The honeybee proved to be as efficient a cross-pollinator of red clover as the bumblebee in 1911. When the precipitation was considerably below normal in June, July and August, 1911, and but few nectar-producing plants were to be found, honeybees collected large quantities of pollen from red clover. In order to collect pollen they must spring the keels of the flowers. In doing this they cross-pollinate the flowers.



Screen cage used by the United States Department of Agriculture to determine the efficiency of honeybees as pollinators of red clover. A colony of bees was placed within the cage and bumblebees were excluded by the one-fourth-inch mesh screen.—Fig. 6, Dept. of Agriculture, Bulletin No. 289.

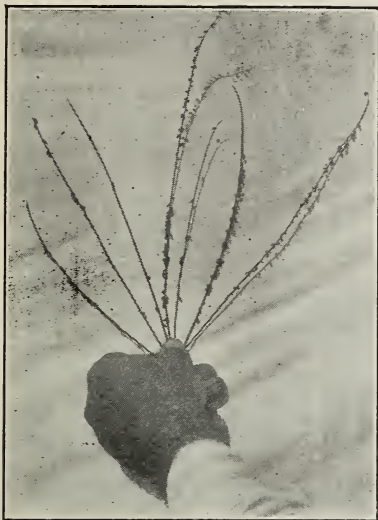
published in 1915, substantiates the observations previously made by beekeepers as to the ability of honeybees in cross-pollinating red clover, as will be seen from the following extracts:

In order to determine the efficiency of the honeybee as a cross-pollinator of red clover, a cage 12 feet square and 6 feet high, made of galvanized-wire screen having 4 meshes to the linear inch, was erected in the same field as the bumblebee cage. It was previously determined that a mesh of this size would permit a honeybee, or any insect smaller than a honeybee, to pass thru, but would not permit bumblebees to do so. Two weeks before the clover came into bloom a small colony of honeybees was placed in one corner of this cage (Fig. 6). The bees soon learned to pass thru the screen. By the time the clover began to bloom the bees had become accustomed to the cage, and while most of them

In the regions where red clover seed is grown, there are usually no other honey plants in bloom during the second bloom of red clover, and beekeepers in these regions know that near large apiaries many more honeybees may be seen working on red clover practically every year than any other insect. No doubt the yield of red clover seed is increased near large apiaries by the many visits of honeybees. If data on the yield of red clover seed near large apiaries were collected, it would, in all probability, show the highest yield in fields adjacent to the apiaries and decreasing yields in more distant fields, as in the case of alsike clover mentioned above.

Pollination of Sweet Clover.

Last August the U. S. Department of Agriculture published a result of some studies in pollination of sweet clover in Department Bulletin No. 844. These studies were conducted at Arlington, Va., and at Ames, Iowa, in 1916. The biennial white sweet clover



Racemes of Hubam clover, from which bees were excluded, at DeGraff, Ohio. A large wire-cloth cage was placed over the plants while in bloom. Only a few seeds were developed.

(*Melilotus alba*) was used chiefly in these experiments, for it had previously been determined that both *Melilotus alba* and *M. officinalis* (yellow biennial) were visited by the same kinds of insects and that both required the same methods of pollination in order to set seed. There is every reason to believe that the annual white sweet clover (Hubam) requires the same methods of pollination. This makes the findings of the Department of even greater interest just now.

In regard to the necessity of insect pollination for sweet clover this bulletin says:

The results in Table V show that an average of 0.37 pod to the raceme was obtained from the plants protected from visitation by all insects during the flowering period. As the racemes of *Melilotus alba* will average approximately 50 flowers each, less than 1 per cent of them set seed without being pollinated by insects. * * * * *

On account of the ease with which the heavy flow of nectar of sweet clover flowers may be obtained many insects visit the flowers, thereby pollinating them. While the useful insect visitors of flowers of red clover are limited to a few species of Hymenoptera, those pollinating sweet-clover blossoms are many and belong to such orders as Coleoptera, Lepidoptera and Diptera, as well as to the Hymenoptera. However, in the United States the honeybee is the most important pollinator of sweet clover.

Recognizing the value of honeybees in pollinating sweet clover, the leading growers of Hubam seed, last summer, had a large number of colonies of bees moved into the midst of their acreage of seed-producing

Hubam. The A. I. Root Co. supplied a carload of bees to pollinate the Hubam clover for the DeGraff Food Co., DeGraff, Ohio.

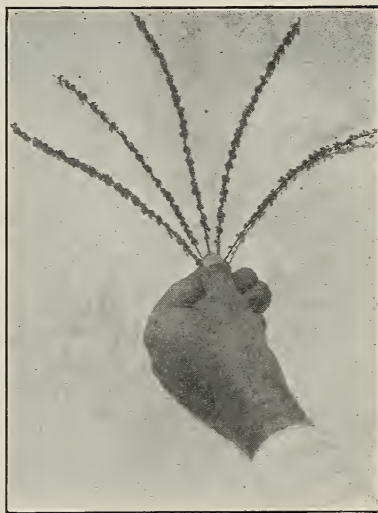
Pollination of Cotton.

Who would ever think there could be any relation between the honeybee and the production of automobile tires? Here is a statement by Thomas H. Kearney, Bureau of Plant Industry, U. S. Department of Agriculture, in The Journal of Heredity, March, 1921, showing the importance of the honeybee in increasing the yield of the long-staple cotton, used by tire manufacturers.

There can be no doubt, in the light of these facts, that thorough pollination, which results in an increased number of seeds per boll, also increases the yield of fiber. What, then, can the cotton-grower do to insure effective pollination? It is, of course, not in his power to increase the number of wild bees and wasps which visit his cotton flowers, but often honeybees also are effective pollinators. It would, therefore, seem desirable to encourage the keeping of bees in the vicinity of the cotton fields and to watch their behavior in relation to the crop.

The use of bees to increase the yield of long-staple cotton was also advocated by Rowland M. Mead in the Journal of Heredity for October, 1918.

More and more careful investigation is revealing the value of the honeybee to agriculture. The growers of insect-pollinated crops of the future will not take a chance on the haphazard pollination by insects not un-



Racemes of Hubam clover to which bees had free access during bloom. These were taken from the same plot of ground as those shown in cut at left but were outside the cage during bloom. Note they are well filled with seed pods.

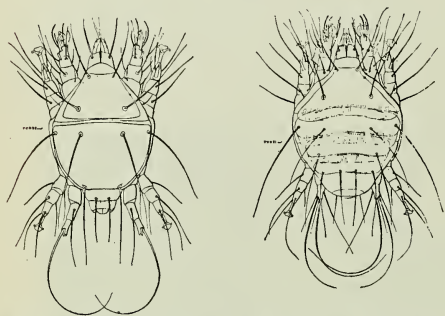
der control, but will demand that pollination be insured every year. Agriculture in the future will, no doubt, demand that large numbers of bees be kept where certain crops are grown. Agriculture would demand this, even though honeybees never yielded any returns in honey.



THE ISLE OF WIGHT DISEASE

The Mite Causing this Disease Not Yet Found in the United States

American beekeepers have been much interested in the reports that have come from their fellow workers in Great Britain regarding the losses that come from the Isle of Wight disease, as it is commonly called. So far as is known, this condition does not exist in the United States, and naturally we are not anxious to have it. The findings of Dr. John Rennie and his associates of the University of Aberdeen, reported in December, 1920, that the disease is caused by a parasitic mite, *Tarsonemus woodi*, seemed to hold out ultimate hope of some remedial methods, for until the cause was known little could be done on treatment. This investigation is one of the outstanding dis-



Mite associated with Isle of Wight disease. Figure at left male, dorsal view. Figure at right female, dorsal view.—(Hirst.)

coveries of the decade in beekeeping, and great credit is due Doctor Rennie and those who worked with him.

A recent paper by Stanley Hirst, the English specialist in mites, is of interest for two reasons. First, he gives much the best illustrations that have yet appeared of the mites found in bees suffering from the Isle of Wight disease; and, second, he decides that the mite is so specialized in structure that it should be placed in a new genus. It should now, according to Hirst, be called *Acarapis woodi*. The illustrations, partly drawn by the artist Tarzi, are especially fine and are here reproduced in part. These will give an idea of the characteristics of this parasite, and would be useful in identification in the event that at any time mites are found in the United States which are suspected of being the one which causes the disease which has been so destructive in Great Britain. In the differentiation of various mites the number and position of hairs are important.

Hirst's descriptions of the mite are technical and they are not given, but any one interested may find them in the June, 1921, number of the Annals and Magazine of Natural History, VII, No. 42 (9th series), pp. 509-519.

From time to time a considerable number of samples of diseased adult bees have been sent to the Bureau of Entomology for examination and since the announcement of the results from Aberdeen they have been examined for mites; none of them were found to contain specimens of this mite. In case any peculiar cases of disease in adult bees are observed, the Bureau of Entomology will be glad to receive specimens for examination. Such specimens may be sent in an ordinary queen mailing cage but it will be better to send a larger number, preferably as many as 200, in case any serious condition is observed.

Mites are sometimes found about the hive, especially in dried pollen and in debris, and in case such material is observed it will be worth while to have it examined also. It is not at all probable that *Acarapis woodi* would be found in any such place, but now that a mite is found to be causing a disease of bees, it will be well to get all possible information on mites about the apiary. Several species of mites have already been found in such places as are indicated. Mites are so small that they may often be overlooked, but can often be detected by slight movements in debris.

Washington, D. C. E. F. Phillips.



THEIR VALUE WORTH THEIR COST

A Defender of the Much Maligned Drone Says the Workers Shine up to Him

On page 151 of March Gleanings, Mr. Aeppler gives the readers of Gleanings a very interesting article relative to the food value of larval food. Without wishing to throw any discredit on the work of Mr. Aeppler, I desire to call attention to one or two details which have a bearing on one of his conclusions.

In getting the weight of the feed as taken from the cells of drones and of workers, what precautions or signs did he go by to select those of the same age? Did he go by size alone? If he did there is a great chance for error for two reasons. Drone and worker larvae are not of necessity the same age when they are the same size. Again, larvae of the same size are not necessarily of the same age even if of the same sex. Bees flood larvae with food at intervals, and though I have much yet to learn in this regard I am inclined to the belief that the



FROM THE FIELD OF EXPERIENCE



flooding is related to the skin-casting periods. Queen larvae have abundance of food with no break, but drone and worker larvae are not fed freely while they are in the quiescent period just prior to the moult. It would be a very easy matter to select 100 larvae, then to select another hundred of apparently the same size, and then to find that in one case the food was ten times what it was in the other.

It does not seem at all reasonable that bees should waste food on the drones, nor that the drone larva because of its sex should waste food in its feeding. Now, as drones are only $11/5$, that is, only a trifle over twice as heavy as workers, they should need only twice as much food. Mr. Aeppler finds them fed over five times as much. Something is wrong here, or rather has been overlooked. Possibly the drone food has much more water in it.

My real subject, however, is not the relative cost of producing drones and workers, rather is it the value of drones in spite of their cost. In the efforts to cut down the number of drones there is, in my opinion, danger of going too far. Drones are expensive to rear, although it is quite possible that they are reared at a time when there is an excess of food, much of which would otherwise be wasted. It requires only a limited number of nurse bees to care for all the worker brood of a colony, and if the nurse bees are in excess the condition is much like that of a family with a new milch cow. Said family gets a pig to use up the excess of milk. Bees should at seasons appear able to rear a horde of drones with but little apparent drain upon their resources.

When we limit a colony to combs all worker this colony is all right until this excess-food period comes, then they seek a remedy. They will put drone cells anywhere they can.

Why will beekeepers persist in going contrary to the instinct of bees? Bees came into their own while our remote ancestors were just coming out of the seas and acquiring lungs. These instincts are pretty well fixed, and the wise beekeeper will go no further than try to guide these instincts rather than try to thwart them. If, then, miscellaneous drone comb is a nuisance, why not give in to the bees and let them have a reasonable amount in a place where it will prove least annoying. Users of the cross-wise frame find that the best place is the lower third of the front comb.

Drones may cost, but trying to eliminate them is also costly. But suppose we could, in some cheap fashion, succeed in eliminating drones almost entirely, would it pay? In regard to this proposition, I have no absolute data. Such are difficult to get. Honey

flows, colonies, treatment, local condition, etc., etc., offer such a variety of conditions that one finds it almost impossible to make an exact conclusion. For these reasons I offer the following only as my belief, not as a proved fact.

In my experience I have been led to conclude that those colonies which lead in honey production are colonies with numerous drones, that rarely does a colony produce a bumper crop of honey and not also rear a lot of drones. I have seen exceptions, but these exceptions are of such a nature that one is unable to deduce anything from them. I am led to conclude that the presence of numerous drones in a colony acts upon that colony as a whip. Let us put this into exact figures.

Suppose two colonies are exactly equal except for this one thing—colony one rears few if any drones while colony two rears 5,000. Admit that it took 10 pounds of honey or its equivalent to rear those drones. Colony one is ahead of colony two by 10 pounds of honey. A heavy flow of honey comes and lasts for three weeks. Colony one has stored a surplus of 100 pounds, while colony two has stored a surplus of 140 pounds. It will be seen that colony two has not only wiped out the 10 pounds advantage which colony one had, but has gained an advantage of 30 pounds. The 5,000 drones cost 10 pounds of honey, but their presence in the hive caused the colony to gain a net profit of 30 pounds.

These figures are all suppositional, and not backed by any experimental data. Yet in my study of colony life I have been amazed again and again that apparently colonies supported a numerous drone progeny with no apparent loss. How account for it? I never have been able to account for this paradox except in the way outlined above. Whether I am right or not, I think it will be wise for us to go slowly in this matter of seeking to eliminate the drone. If the drone reacts upon colony activity and so actually pays well for his board and keep, in spite of the fact that he can himself gather no honey nor do any work about the hive, then he must be considered of economical value.

We call worker bees neuters. They are undeveloped females. What do we know about their sexual reactions? How can we say with any confidence that they desire in no way to shine in the presence of the male? My study of bee life has led to me to think that we should go slow in thinking that worker bees are entirely without sexual instinct. I believe that it is residual sexual instinct in them that brings on the swarming fever, but that is another subject.

Norwichtown, Conn. Allen Latham.



FROM THE FIELD OF EXPERIENCE



THE OLD LESSON REPEATED

Bees Far North Do Not Winter Best on Natural Stores Alone

On Sunday, March 5, bees in our home district (York County) had their first cleansing flight since late last fall. Although we have had a milder winter than usual, yet around home here not a day was warm enough for the bees to take to the air. As previously mentioned, our bees south of Hamilton have had more than one good flight during this time—all going to show what 50 or 60 miles may mean in the matter of wintering bees. On March 6 my son and I made a hasty visit to five apiaries in the home district to see that no entrances were clogged or water standing in front of entrances. With the first warm weather, pools of water will sometimes form directly under the entrance, even if the hives are all on high ground.

Judging by the looks of things at the different yards, I should say that there will be little loss, taking all apiaries into consideration. At four yards we noticed but one dead colony and that was queenless last fall and overlooked when the bees were packed. This one dead colony was one among an apiary of 178 colonies. Of course, there will be sure to be losses later on from queenlessness, etc. In fact, we always expect a certain percentage to drop out each spring when systematic requeening is not carried out in actual practice, much as we would like to be able to do this.

At the fifth and last yard visited, conditions were not any too good, and we found three colonies dead and a few others ready to go, all from the same cause—dysentery. It required no examination to tell the reason of these impending and actual fatalities. Simply looking at the back of the hive, to see whether the colony had been fed sugar syrup or left with natural stores was all that was required to solve the problem. At this apiary the bees are all on Jumbo frames and, as a consequence, they are quite heavy with a mixture of buckwheat and sweet clover honey gathered mainly in August. Of course they had far less sugar syrup than any of the other apiaries and, as a result, there will be more loss in that one yard apparently than in the other seven apiaries where the bees were lighter in the fall and consequently had to be fed more sugar syrup to get them in condition for winter.

So far in our experience, we have found sweet clover honey a very poor food for winter. It granulates solid, and in colonies showing the dysentery so badly we found combs of honey all so solid that one could hardly dig it out of the cells. For three years we have found this same condition in colonies having any quantity of

sweet clover honey for stores, and it is certainly a case of three times and out, for in the future we will not risk this grade of honey for winter purposes.

As to apiaries in Simeco County I have heard nothing since last October, except to learn in February that all were covered with two to three feet of snow. We are just making preparations to take a run in the car tomorrow to visit the five apiaries south of Hamilton, which we have not seen since last October. This is about 85 miles from home, but we are not worrying over the trip as much as we would have worried, a few years ago, at the thought of making a trip to a yard 10 miles away. Many changes have come about during the last 10 years, and beekeeping, while not making progress in some lines perhaps as much as some other industries, has greatly changed during this time.

J. L. Byer.

Markham, Ont.



WORD "EXTRACTED" ON LABELS

Needed Some Places to Distinguish Between Extracted Honey and Strained Honey

Shall we eliminate the word "extracted" from honey labels? In my opinion, no, sir! Most emphatically not. Down here in Texas we beekeepers have spent years educating our customers to the superiority of extracted over ordinary honey, which may have been boiled or squeezed together with brood, pollen, and dead bees, and the whole mass suspended in a sack to strain, drain, or drip.

Formerly our extracted honey had to compete with much of this "strained honey," as it was called. However, as the old-time box-hive beekeeper learned better methods, and transferred to frame hives, this stuff that once passed muster as honey has almost disappeared from our markets.

But if I should send out my price list quoting "Honey," I am satisfied that nine-tenths of the replies would inquire as to kind of honey (whether "extracted," "comb," or "chunk") before placing orders. Of course, if one is quoting both "Honey" and "Comb Honey," the natural supposition would be that the "Honey" is not comb honey, but at the same time it might be almost anything else; whereas all my customers know that "extracted" is the cleanest, clearest, most wholesome, and best-tasting honey they can buy.

Perhaps it was unfortunate, in the first place, to have coined the term "Extracted Honey;" but, at this late date, I submit that it would be just as big a mistake to make the change suggested.

Bay City, Tex.

J. D. Yancey.

OUR friend, Allen Latham gives on page 154, March Gleanings, many good reasons why the bee-space should be below rather than on top of

supers. Now, he may be right, but will it pay to change where we have hundreds or thousands of hives or supers with the bee-space on top? When I began beekeeping there was a great deal said about different-sized frames, each claiming to be better than the others, and I changed the size of my frames and brood-chamber as many as five or six times. Each size, I found, had its advantages as well as its disadvantages; and I finally went back to the Langstroth frame, not because it was better than others but because it was a standard frame in general use. We are using hundreds of supers without bee-space either at top or bottom of super and get along very well. It doesn't, as a rule, pay to keep changing over our outfit even if something is a little better.

* * *

That editorial, on page 141, on aluminum combs, is well worth the careful attention of anyone in the North who contemplates using these new-fangled combs. Our experience tallies with that of others, that these combs do not prove satisfactory in our cooler climate, however it may be in the South. Side by side I prefer the well-wired frame of foundation to a complete comb of aluminum.

* * *

The "New Beekeeping" described on page 143 is sufficiently distinct from the old hit-or-miss methods to be called new, and it has been tested by a sufficient number of beekeepers to prove its value, so it can be safely recommended to all who have not tried it out. Yes, sir, it is all right.

* * *

"When and How to Set Out," D. L. Woodward's article beginning on page 149, should be of great value to beginners. The advice to set bees out at night is doubtless all right, but of late years I have come to think a cool or cold day, too cool for bees to fly, is just as well. We usually have enough such days during the season in which to set out all our bees.

* * *

R. L. Snodgrass informs us, page 155, that 10 acres of yellow sweet clover will keep 100 colonies from starving. This may be true in Kansas, but it would hardly prove true in the East. The sweet clovers do not appear to yield nearly as much nectar in the East as in the West.

* * *

Reading Gleanings helps one to be optimistic. When we meet with some reverse we



are apt to think our location unfortunate; but when we read of the difficulties of beekeepers in other sections, as for instance C. E. Bartholomew, who lost

100 colonies in a single night (see page 166) from those pesky ants, we may thank our stars we are as well off as we are. Mr. Poppleton told me the best way to fight them was to follow them to their nests and destroy them there. These nests I found mostly in the decaying roots of the saw palmetto.

* * *

The size and appearance of those western honey-houses almost take my breath away. But the West is a big country, and business of all kinds is done on a large scale. There is, however, one thing peculiar about honey-houses, that no matter how large you build you never regret it.

* * *

Honey mixed with water half and half, as described by H. M. Myers, page 167, as an anti-freeze mixture for automobiles, is an idea worth remembering. He tells us the boiling temperature is approximately 228 degrees. We are more interested in the temperature required to freeze it. Will it stand 20° or 25° below zero? An advantage of such a solution would be that it evaporates much more slowly than clear water. I set some of this mixture out last night and it stood 14° below freezing this morning.

* * *

R. J. Williams, page 154, says, "Verily there is nothing new under the sun, especially in apiculture." However true this proverb may have been 3,000 years ago, it is not so today. We have no reason to believe that the Queen of Sheba wired King Solomon of her intended visit, or that Alexander used an ounce of gunpowder in his somewhat famous conquest of the world. The Romans did not use airplanes in their military tactics nor steamboats in their warfare against Carthage. The printing press was unknown at the beginning of the Christian era; and Simon Peter never used a motorboat in setting his fish nets in the sea of Galilee. Vergil, who wrote so interestingly of bees, never dreamed of a frame hive, nor did Huber ever hear of a honey-extractor or comb foundation. Even our beloved father Langstroth or Quinby or even Dr. Miller would have opened wide his eyes to hear Mell Pritchard tell of queens taking a joy flight of an afternoon in our Indian summer, after their arduous labor of egg-laying was over. Yes! verily, there is much that is new in beekeeping as in everything else. If we were to tell of all that is new, even in beekeeping, it would take much more space than I have at my disposal.

It is an unusual and rather agreeable experience for a mother of a family to find herself so popular that she is constantly receiving invitations to take pleasant rides with gentlemen—real estate agents.

Without exaggeration I believe we have been through hundreds of houses, and let me tell you of some of the conveniences and comforts we have found in these southern California homes and see if you do not agree with us.

In the first place the California housekeeper in average circumstances, like your wife, Mr. Subscriber, or me, apparently realizes that a small, compact house can hold more happiness than a large one, for it enables her to have more time to enjoy the wonderful climate and scenery with her family.

We have been through little bungalows which cost a small fortune to build, exquisite and perfect in every appointment and evidently designed for people who could afford to gratify every whim but preferred a house small enough to manage without a resident servant.

SUPPOSE you let me conduct you through a typical southern California bungalow, moderate in price and yet complete and convenient. We will take this frame, colonial bungalow, painted ivory white with a touch of gray green on the window screens and with a dull green, shingled roof. We might select a flat-roofed Spanish stucco, an English cottage type of stucco with steep gables or an Italian villa, also of stucco, but when one must choose a moderate-priced home I believe the good old substantial frame house is safer.

Notice it nestles close to the ground, but the lawn is gently terraced down a few feet from the house and at the street is terraced down with bricks on which ivy is growing. You see the effect is low although it is well above the street level. Notice the view of the distant mountains from the porch.

The solid front door you see is 3½ feet wide, and I have seen them even wider. While there is no screen to this door there are screens to the long side lights, and many cautious housekeepers open the side lights and view the prospective guest through the locked screen before opening the door. There are also two pairs of French doors opening on to the porch.

The living room in this bungalow is about 14 by 23 feet with a beautiful fireplace at one end, flanked by built-in bookcases which fill the whole end of the room. The fireplace is of dull finished tile in soft colors, framed in ivory woodwork, for that is the

The Small House of Southern California

CONSTANCE ROOT BOYDEN
(Stancy Puerden)

finish throughout this house. The paper, which is alike in living and dining rooms, is of a light, stippled effect which will harmonize with any color scheme.

While we have yet to see a California house without a fireplace we have seen very, very few which show use. Sometimes a gas heater is placed in the fireplace and often an ugly little stove stands out in front of it. Notice that this one has a fire of "briquets." There is a gas "floor furnace" in this room too, with a flue to carry the fumes to the chimney. Many of the bungalows are piped merely for gas stoves, and almost none of the modern ones have real furnaces.

Notice as you come into the dining room that there are glass doors in the wide opening between the two rooms. The high cost of fuel in this state makes such doors quite as much of a necessity as in the East. In the dining room is one of the most charming features of California homes. It is the built-in sideboard or buffet with ample china closets on each side, the whole extending across one end of the dining room or recessed into the middle of one side wall. Thus there is no cumbersome piece of furniture to mar the fine oak floor when moved, nor do you have to wield a daily dust mop under it. I am told that during and immediately following the war, when lumber was so high, there was a tendency to omit the built-in furniture, but the sensible, labor-saving custom is apparently returning, for some of the finest new houses we saw contained exceptionally fine built-in sideboards. Properly built they tend to make a small dining room seem more spacious and symmetrical.

The French doors, opening out to the little pergola roofed patio, make the dining room seem almost out of doors in warm weather. That little patio is typical of southern California homes, even the humblest, although it is not always out of the dining room.

NOW come out into the kitchen with me. If you men can get some ideas for improving the kitchens presided over by your wives they will appreciate it. Notice that the walls and woodwork of this kitchen are spotlessly white with a pretty, inlaid linoleum on the floor.

I never saw a California sink which was not under a window or pair of windows, so that the housekeeper may not only feast her eyes on God's out-of-doors and breathe pure air while she is at work, but listen to the music of the mocking birds as well. In this kitchen, between the windows, is a little cupboard set into the wall. It is similar to a bathroom medicine cabinet and in it is kept a supply of soap, scouring powders, sapolio, brushes, etc. The sink itself is built in with tiling

forming a shelf at each side instead of the enameled drain boards which are so common in the East. Underneath the tiled shelves the space is solidly built in to the floor with cupboards, drawers, zinc-lined bins for flour, sugar, etc., and a kneading board which slides out like those in kitchen cabinets. The space underneath the sink is open, of course, for comfort in standing before it; but all the other space is utilized, and being solid to the floor the housekeeper is saved the necessity of sweeping under it.

Above the tiled drain boards are hung more cupboards at a height which leaves a convenient working surface underneath them. Notice that these cupboards are a little narrower than those below on account of the windows over the sink. Instead of tile a composition called woodstone is often used. Above the sink notice the little recess in the tile for a cake of soap.

This built-in hood, plastered like the rest of the ceiling, is over the range to carry away the odors and steam from cooking.

Another convenience found in every California home which we have seen is the so-called "cooler." This is a cupboard, shaped much like an ordinary chimney, reaching from floor to ceiling, with shelves of wire netting or slatted wood. There is a screened opening into this from the outside, below the level of the floor, and another at the top or near the top. A current of air is drawn through this at all times, making it a good substitute for the refrigerator in cool or moderate weather and supplementing the refrigerator in warm weather. In some of the best coolers is a shallow draw shelf for eggs. These coolers are supposed to be more efficient if they are on a north outside wall, or a shaded wall, but I have seen them in all positions and on inside walls. If I were going to move back to Ohio, which I am not, that cooler idea should accompany me.

We have found both breakfast rooms and breakfast nooks or alcoves, but to my mind the latter are far preferable, saving time and effort and answering every purpose of the separate breakfast room. Having enthused over the one we built in Ohio to the extent of some 2,000 words on this page I am not going to say any more about them now.

Here is something which you men must not miss. Notice when I open this narrow cupboard door a most convenient ironing board drops down into position all ready for ironing, and notice too that a small sleeve board is so hinged that it can be dropped down over the larger board when needed. If your wife hasn't this convenience, make her a present of it and see if she does not pay for it by keeping your best trousers in press.

This wide cupboard near the range has no shelves. Instead it has rows of strong hooks on which to hang such utensils as frying pans, stew pans, etc. It is surprising how many kitchen utensils may be hung

up and how much more accessible they are than when nested on shelves.

CALIFORNIA homes are sometimes built without bedrooms, having "disappearing beds" in living room, dining room or both, but I don't believe there is one in Los Angeles without the "screen porch." By this is not meant the ordinary screened porch of the East. A "screen porch" is the dearest little laundry room and back porch combined you ever saw. It is really a small room opening out of the kitchen with several wide windows protected only by screen. The white enameled laundry tubs are usually placed under the windows so that the housekeeper can comfort her soul with a vista of graceful pepper trees, plummy yellow acacias, palms or perhaps a mountain view. In the house where we are at present some misguided builder placed the tubs against the blank wall of the house away from the view and light. Many of the better houses have the screened windows protected by removable sash for use in winter.

A broom and cleaner closet is often on the screened porch although it may be in the kitchen.

DEAR me, I kept you in the kitchen region so long that we shall have to hurry through the rest of the house. Three-bedroom bungalows are not as common as those with two, but this one has three and they all open in this long, rather narrow hall which divides them from the rest of the house. Opening into this hall are a most convenient linen closet with wide shelves and drawers and a large coat closet. The bedrooms with their many casement windows are as airy as the average sleeping porch. Many bedrooms in this state have Pullman windows, disappearing down into the wall, and they seem to work very well in this climate although not considered practical in the East. Sleeping porches, protected only by canvas curtains which can be drawn up by cords on pulleys, are also very popular and can be used with comfort the year around.

Notice that each bedroom has one or more convenient clothes closets with poles for clothes hangers and plenty of hooks. In some of the more expensive bungalows chiffoniers are built in at one end of the closet under a window.

The bathrooms in the newer bungalows are a joy to the housekeeper. A large proportion have beautifully tiled floors, built-in tubs and showers and drawers for towels, fine medicine closets with mirrors and exceptionally good fixtures throughout.

The attic to a southern California house is apt to be an air space only, and the tiny basement, if there is any, is a joke to an easterner. As to the garage, it is almost always present, but if I stopped to take you through it the editor would be charging me regular advertising rates.

LAST month when you read Vergil's account of the "memorable art derived from an Arcadian king," showing how to restock your beeyard "if thy whole swarm at a stroke should fail, with no stock left for breeding," and the story of the wild bees feeding the infant Jupiter, and the other story of the beekeeping shepherd, did you smile, dear Sideline friends? Probably you did. But I know you smiled in gentle kindly wise, as at the imaginings of your own wondering wide-eyed children as they spin their baby tales. For it is from the childhood of the world that the singers of songs and the tellers of tales have handed down to us these dim old legends, some of them so strangely foolish, some of them so strangely wise, and nearly all of them strangely beautiful, with a deathless constraining beauty that men will always fold against their hearts—and love.

"Gleanings is being published in 1922." So a certain irate gentleman recently wrote me, in delicate expostulation against my enthusiasm for the antique bee lore of the old Roman poet of the Fourth Georgie, and my stories of the long-ago legendary past, when the childlike people of the young world—God's kindergarten—dreaming their dreams, spun deathless stories of nymphs and dryads and gods. It was long before cool-searching Science had learned so much and taught so much, that man's everlasting questioning as to the *why* and *how* of things around him found its earliest answers in the poetry of his own heart, flowering into lovely song and story, till the hours and the seasons and the dawns became living things, the sun was a god-driven chariot of flame, and every flower, every tree, every brook, whispering to its bending grasses, and all the sun-swept long sea-breakers held some divine life hid within. It was long before the heart of the world had been hardened in the commercialism that Wordsworth cried out so sharply against, with his

"The world is too much with us; late or soon,
Getting or spending, we lay waste our powers"

that the men of ancient Greece and Rome, though "suckled in a creed (now) outworn," sensitive to pulsing beauty and responsive to the call of the earth and the moon and the ungathered winds, cared earnestly that they might

"Have sight of Proteus rising from the sea
Or hear old Triton blow his wreathed horn."

It was long before a deepening human maturity had made more spiritual the growing conception of the great Divine Reality, at whose feet all lesser gods are laid away, that men saw in every happening of every day and in every aspect of nature the foot-

Beekkeeping as a Side Line

Grace Allen

print of some god,
and goat-footed
Pan crashed
through the lilies
of the river for
a reed through
which to blow
the magic music
that still rings in
men's hearts.

"Sweet, sweet, sweet, O Pan!
Piercing sweet by the river!
Blinding sweet, O great God Pan!"

It was long before a holy figure had walked the Galilean hills, long before a quiet voice had said "Our Father," that the beauty-loving people—out of their amazement and their humility and their awe—created so many gods, saw so many "sudden faces strike a glory through the mist."

Plutarch tells of an old tradition that when the cross was reared on Calvary all the ancient oracles ceased, and out at sea astonished sailors heard across troubled waves the sharp cry, "Great Pan is dead!" O you gods of Greece and Rome, "with your purples rent asunder," though you be dead, we love you still. We have laid aside the half-truths of your great beauty for the greater beauty of a greater and ever growing truth, yet, though you be dead, we love you still.

"By your beauty, which confesses
Some Chief Beauty conquering you,—
By our grand heroic guesses,
Through your falsehood, at the True!"—

we love you still. Though even Pan be dead. (And O—but tell it not to the irate gentleman who lives only in 1922!—some of us have heard strange music "blinding sweet" across the hills, and have wondered if Pan be really dead!)

But Gleanings, insists the irate and friendly gentleman, is being published in 1922. So, having paid one last wee tribute to the "mythic fancies" and the "debonair romances" spun in the youth of the world, and asserting stoutly our precious privilege, even while tramping steadily through the high noon of Today, of stretching one appreciative hand toward the radiant sunset of Yesterday (Ah, but it was sunrise once!), while the other reaches longingly toward the dawn of a great dreaming Tomorrow, I come happily back to the present, and make my bow to the twentieth century. And in so doing I shall let loose on this unsuspecting page a crowding troop of personal pronouns (except for one or two slips, how I held them in leash thru 1921!), and you shall see a veritable riot of those most exultant and friendly of all letters, the gayly irrepressible capital I's!—with their faithful followers, the we's and our's and us's.

It happened in 1921. Though perhaps it reached back into 1920. May I go back that far? That was when I had my nervous breakdown—a story by itself, really funny

in spots, including unattended lectures, an undelivered speech of introduction, an unworn new dress—but far from funny as the months wore on. So we rented out our big old tree-surrounded house in West Nashville, furnished, and started boarding, and Mr. Allen made himself famous with the dictum, "Every woman ought to have a rest once in ten years!" For six months we boarded near the downtown section. But last April we went out to the home of the country friends on whose place we had our beeyard. What a delight it was! From the windows of this home we could see the hills and Mrs. Waters' garden. And I walked through a tiny woods lot, going over to the beeyard. Many a morning we slipped over there and cooked our breakfast in the yard; many a hot panting afternoon—O the heat of 1921!—we ate sandwiches and ice cream there and watched the long cool shadows come. (And for that matter, many a hot night we slept there too!)

One Saturday in mid-May, Mr. Allen, who leaves his office at noon on that happy day, came driving out to the yard to join me, already at work. He brought out a negro man to paint the honey-house, and sandwiches and ice cream for our lunch. After the man was well started on his work, and we had finished eating, Mr. Allen said,

"There's an auction over on Lone Oak Road. Let's go."

"Where's Lone Oak Road?" I asked.

"And why do we want to go?"

"It's the road we've never known the name of, running between Hillsboro Pike and Granny White Pike," he explained. "They're advertising a country bungalow with city conveniences and two acres. Let's find out what such property can be got for."

I saw his point. For several weeks the State of Tennessee had been considering buying our old house, and I had always wanted a little home in the country.

"All right. But I'll have to stop by the house and change my clothes." Thus spoke the traditional woman.

"O never mind your clothes, you look all right." Thus spoke the traditional man, adding, "You don't need to get out of the car."

Off we went, one of us propolis-stained, short-skirted, cotton-hosed, defiantly hatted. The first thing I did was to get out of the car. The next thing was to become painfully conscious of propolis stains and cotton hose, when we promptly encountered the gallant State Librarian, whom we knew, and several silk-clad ladies, whom we didn't. The next thing was to *oh* and *ah* in delight at the arrangement of rooms and the unending windows. The next was to gasp in amazement to hear my husband's voice raised in the bidding. The next was to urge him to one more bid, when he seemed about to stop. The next was to gasp again. For the brown shingle bungalow on Lone Oak Road, with city conveniences and two acres, was ours! Talk about a surprise!

The Librarian and the husbands of the silk-clad ladies came to congratulate us.

"But what can we do with it?" we expostulated, amazed at ourselves, but modestly concealing our inner exultation at the larkly adventure. "Our furniture is rented till October."

So we rented the bungalow, too, for the summer—another story in itself! But on October first, the State having bought the old house meanwhile, we moved our things out here. The moving, too, was a story in itself. Things suited to a big old brick house were utterly unsuited to a small shingle bungalow in the country. So there was a feverish time of selling—another story!—giving away, cutting down. From the attic were brought down old beloved dolls, carefully wrapt, worn-out garments, unfinished quilts, faded wedding slippers. But at last we were moved.

The first thing we did was to have the kitchen sink raised. The next was to have the two old oaks in front trimmed up and "doctored." Which is still another story. For one of them—O joy!—was a bee-tree. The bees, with nearly 50 pounds of honey, were in the hollow top part that had to be cut off. And after it was cut off, to get the men to finish their job, we had to capture the bees and take them to a young friend across the river, where they couldn't possibly find their way back. It was all pleasantly exciting. But the honey was disappointing. It was very dark and very strong and very something else and neither of us liked it a bit. And "wild honey" had always sounded so alluring, so flavored with romance and adventure! The disillusionments of life!

AS DREAMING MUST!

My heart hath long desired a room
That looked on hills and garden bloom.

This year young April's wizard wings
Dropped lovely unexpected things,
And I have watched, as from old towers,
A cavalcade of magic hours,
Through windows dawn-filled, star-strown, blue,
Yet picturing earth's beauty, too.
Through one east-curving panelled glass
I see a road sweep out and pass,
Inviting south—where, green and still,
Another window shows a hill;
And where, beneath gift-laden skies,
A small white-gated garden lies.

Here I have seen spring come and go
In clump and bed and border row
Of violets and daffodillies,
Peonies and valley-lilies,
Flags of lavender—nor yet
Hath summer come with mignonette,
Hath summer spread her pinks or phlox.
Or hinted at her hollyhocks;
Not yet hath summer brought her rose
Where beauty's dream of Beauty blows.

Here I shall watch them, one by one.
Break into blossom in the sun.
And I shall see them, one and all,
Break into blossoming—and fall—
As blossomings (and dreamings?) must—
Till they shall be but haunted dust
Blowing and drifting down the ways
Of ancient unreturning days.

But though the garden dies, yet still
I lift mine eyes unto the hill.



FROM NORTH, EAST, WEST AND SOUTH



In Northern California.—The 33rd annual convention of the California State Beekeepers' Association has taken place. It was a success, and the future of the association and the industry are assured in no uncertain terms. Many of the older members were quite skeptical concerning the ability of the state association to thrive under the trying beekeeping conditions of the time. The association leaders today have the proper spirit. It is a liberal spirit, and it is the same spirit that imbued that little band of beekeepers that met on the sixth day of January, 1892, in the Los Angeles Chamber of Commerce for the purpose of organizing the California State Beekeepers' Association. Those present at this memorial gathering said that they wanted to organize an association that would "represent the beekeepers' industry of the whole state of California." Today the stationery of the Association bears the inscription, "No North, No South, No East, No West—Just California." From this little gathering in 1892, we have today only J. C. McCubbin and M. H. Mendleson. Mr. McCubbin was present at the convention, and the association voted unanimously to make Mr. Mendleson, who has worked untiringly during these many years, second vice-president.

Another indication that the bee industry is thriving in our section of the state is the fact that during the past few years no less than eight county beekeepers' organizations have sprung into existence. The counties are Alameda, Butte, Fresno, Glen, Napa, Shasta, Solano and Tulare. It is expected that during March there will be organized a beekeepers' association in San Joaquin County. We hope that this good work will continue. It is the plan to affiliate the county organizations with the state association, and we hope that local bodies will spring up overnight, as it were, in all parts of the state.

February weather was unusually cold and wet, and spring bloom will be two to three weeks late. The ground is sufficiently well soaked and there will be good crops, dependent on late spring rains and favorable bee weather. Unprotected bees have suffered somewhat from the cold and continual moisture up to the present time.

Big Sur, Calif.

M. C. Richter.

* * *

In Southern California.—The weather has been cold, cloudy and rainy the past month. Work of all kinds is, therefore, held back very much. I have never before experienced such a continued cold and cloudy spell at any one time in my 26 years in southern California. However, there are enough willows and other blossoms out so that the

bees could soon make a living if the weather would moderate a little. On account of so much rain, the beekeepers are very optimistic and feel that the prospects for a crop of honey in 1922 are as good as they have ever seen.

Many beekeepers are of the opinion that the orange honey crop will be very late if any crop is secured in those sections where the oranges are badly frozen. We feel that most of the prophecies on the orange crop are only a guess at best. As the leaves on the trees dry up and drop off, it makes the prospects look the more gloomy for honey from that source. But this is one of the seasons when one does not have to depend on the orange, as the black sage will be just as early and this year just as sure a producer.

Some apiaries are offered for sale and a few sales are reported, the prices ranging from six dollars per colony up.

Quite a large per cent of the beekeepers who are members of the Exchange have signed the new contract. They feel that the system is the proper one. With the prospects for a crop so promising and three years of experience back of us, the Exchange should give good satisfaction to its members during the next few years.

Steady work in the apiary will be the order this month. A few days will occur when it will be unwise to open the hives; but there are always hives to get ready, frames to wire, foundation to set, and other bee-work to do. A glance in a hive will often suffice to keep one in touch with conditions, and, just as soon as the hive is well filled with bees, one can put on a super. Even if the weather is cool no harm will result, if no brood is put above. Treat those colonies that show any signs of disease. The colonies on which drawn combs are placed for extracted honey can, in most cases, just as well draw a few sheets of foundation and be all the better for it. There are some cases and conditions where a colony will not draw comb when it will store surplus honey. It is better to have the surplus super on a few days in advance than to have the bees idle because they have no room. Surplus honey is generally stored the last part of April in southern California and extracting is usually necessary. But if a beekeeper has combs enough so that the bees can store all of the orange honey or other first crops without any extracting, it is money well invested. He should be in no hurry to extract this early honey; for if he has any trouble about unripe honey, it is sure to be this new honey, stored when the weather is still cool and in many cases cloudy. Plenty of tank room is also essential, as a continued settling tends both to clarify and ripen the honey.

Corona, Cal.

L. L. Andrews.



FROM NORTH, EAST, WEST AND SOUTH



In Florida.—Along the southeast coast and on the Florida Keys the spring honey flow will be at its height by the time this is in print. The saw palmettoes are in bloom now (Feb. 27) and the young plume shoots are coming on in such numbers that, if the weather is right, there will be one of the best palmetto honey flows this part of Florida has ever known.

Unfortunately the honey flow is coming a little too early for the bees to be in condition to make the most of it; however, they are rapidly extending brood-rearing and will be able to take advantage of the best part of the honey flow.

In addition to saw palmetto the cabbage palmetto is going to give a heavy bloom in March and April. This is about four months ahead of its usual schedule. It may also give a honey flow at the usual time in July and August.

Coral sumac is preparing for a heavy bloom and will come along with the palmetto this year. Usually this tree is the first to bloom in the spring and provides the bees with the stimulus necessary to start their brood-rearing in earnest.

The usual order of bloom seems to be upset this year, especially on the Keys, which have been suffering from drouth, the rainfall being over three feet below normal last year and none yet this year. There has been only seven-tenths of an inch rainfall in the past four months, and this was divided between two light showers weeks apart.

It has been exceptionally warm for the season the past winter. The temperature dropped below 60° only two nights and then did not reach 50°.

In this part of the state bees went into winter weak and short of stores. On the Keys it has been necessary to feed all winter, and feeding is an everyday task down here. If at one feeding you give them syrup in quantity sufficient to last, the bees will be unable to care for it and fermentation sours the syrup and kills the bees. Neither will the bees take syrup or thinned honey from an open feeder at any time, and will seldom disturb combs of honey when exposed in the yard. Just last week the combs of honey from an old box-hive were exposed in one yard for the bees to rob out, and it took them over four days to do it. In the North the same combs would have been licked out in an hour and the whole yard would have been in an uproar.

Key Biscayne, Fla. C. E. Bartholomew.

* * *

In Texas.—The weather conditions during February have been favorable to the bees. The month, as a whole, has been cold and to some extent rainy.

While not more than two inches of water has fallen at any one place during the month it has been ample to ensure a spring honey flow. The temperature has been sufficiently low to cause the bees to be quiescent or clustered during most of the time. This has retarded brood-rearing and has decreased the consumption of stores. The coldest temperature of winter occurred the night of February 28 when the thermometer reached 20° above. Just what the result of this cold weather will be is not known, but beekeepers are certain that no harm has been done either to bees or honey plants.

There is a great deal of activity in beekeeping lines this spring. This is not only evidenced by the increased sale of bee fixtures but by the organization of a number of beekeeping firms. The very latest development is the organization of the Suni-Land Bee and Honey Company. This organization is similar in operation to the Western Bee Farm Corporation of California. It is reported that this company will start off the season with 2000 colonies of bees in its outyards. This firm should do well, as the man promoting it has been very successful in putting into operation similar schemes, and the men who will have the active charge are experienced beekeepers.

T. W. Burleson of Waxahachie started a queenyard at Mathis, Texas, just a year ago. His object was to raise queens for his own pound-package business. This experiment was so successful that Mr. Burleson has increased the size of his yards and will sell queens this coming season. The queenyard is under the care of J. W. Seay, formerly of Lancaster, Texas, who is well known to the beekeeping world. His assistant is O. E. Timm, who formerly resided at Bennington, Neb., and was secretary of the Nebraska State Beekeepers' Association.

Lloyd R. Watson, who has been the apiculturist of the experiment station, for the past year, has resigned and will take up the work toward a Doctor's degree, at Cornell University. The writer will take up the work left by Mr. Watson April 1. Quite a change will be made in the carrying out of the experimental work in beekeeping under the experiment station. All of such work will be carried out at a newly established substation, which is located 12 miles southeast of San Antonio, Texas. All of the equipment used in this subject now in the central station at College Station will be removed to the San Antonio location, and, if the present plans are carried out, this substation will become the largest and best-equipped laboratory for bee investigations in the United States.

H. B. Parks.

San Antonio, Tex.



FROM NORTH, EAST, WEST AND SOUTH



In Porto Rico.—The tropical beekeeper may not have freezing winters to devastate his colonies, but he has what may be equally bad or worse—the wax moth. Few beekeepers who have not kept bees in warm climates can appreciate the danger of the wax moth. It is on the job every month of the year, ready to work overtime in any colony which may become weak from any cause whatever.

However, even the destruction caused by the moth has its silver lining, as it tends to eliminate the careless beekeeper and the bees that are not looked over regularly. The northern beekeeper may allow his bees to go for a year or two with but little or no attention. Unless the winter is excessively cold his loss will not be great. Not so under tropical conditions. Once let a colony become weakened in numbers by an old queen, loss of queen, or through shortage of stores, and the colony is gone, unless the owner is on hand to remedy the trouble by giving emerging brood and a new queen. If the bees are left to shift for themselves, the moth will make short work of what is left, leaving nothing but the hive filled with frames, whose wood is badly eaten by the larvae of the moth. It frequently happens that the frames are so weakened as to be of no further use.

The life of the queen under tropical conditions is short because she has little or no complete rest. Heavy loss in colonies may be looked for all over the island from this cause, where the bees do not receive sufficient attention to keep the colonies in good strength.

This is the silver lining to the troubles of tropical beekeeping. They do little harm to the man who cares for his bees. On the other hand, they will quickly eliminate his competitor whose colonies become weakened in numbers.

One thing more will tend to decimate the ranks of the tropical beekeeper. This is old Mother Nature herself. The warm, tropical showers are followed by the hot sun. This heat beating down turns into vapor or steam any water that may be lying on covers or absorbed into the wood. This condition going on, shower after shower and day after day, quickly destroys the wood of all hives that are not kept well painted with the very best of paint. So one's investment in beehives when uncared for rapidly disappears.

The specialist in bees has a large investment in his hives, bees and equipment. He well knows the importance of keeping his colonies in the best possible condition. The man who has only a few colonies as investment, or the man who works his bees as a side issue from his main business, is more likely to allow his colonies to fall by the wayside when profits are slow in coming.

This condition is bound to enhance the prospects of the professional beekeeper. It is likely he will be able to absorb his smaller, less interested competitors.

Aibonito, Porto Rico. Penn G. Snyder.

* * *

In Alabama.—On account of the unusual warm weather for the past month the bees have begun brood-rearing in earnest, some colonies having as many as five and six frames. While this will cause greater consumption of stores it will be beneficial to the package shipper, unless the cold wave that is just beginning here is too severe or lasts a long time.

For this same reason the honey plants are making a wonderful growth, and, unless they are killed, should be in fine condition for the honey flow.

Most shippers of packages and nuclei have more orders booked than they did this time last year, which shows that the northern beekeepers are preparing to keep more bees to make up for the difference in the price of honey.

Honey is still moving rather slowly, but most beekeepers who have not sold their crop are confident that it will be all gone before the new crop is ready for market.

Montgomery, Ala.

J. M. Cutts.

* * *

In Louisiana.—It seems strange that the North and East have suffered so much by cold this winter, while here in Louisiana, where the pines and palms meet, we have had very little weather when artificial heat was needed. Only one time this winter has ice formed on exposed water, and that was only for a few hours. Geraniums and other tender plants in flower gardens were not hurt and are now blooming profusely.

I have just returned from a tour through the middle and southern sections of the state where I found bees in better condition than they have been for years. In looking through some hives I found them in most instances with four and five full combs of brood. The very open winter and great honey flow of last fall did the work.

Colonies of bees are usually strong at this date, but not to the proportions that they have already reached this season. They are really in early-summer strength, and the workers are great enough in numbers to gather the willow honey flow, which will be coming very soon. In fact, some of the trees are blooming now (Feb. 28). The yellow jessamine in the hill country is blooming, and in the open country white clover is being worked on freely by the bees. It will take a very heavy freeze now, which is not looked for, to prevent a very large crop of honey this season.

E. C. Davis.

Baton Rouge, La.



FROM NORTH, EAST, WEST AND SOUTH



In Mississippi.—On the date of writing the state is in the grip of a cold wave that may do some damage to bees, especially here on the Gulf Coast. Colonies examined yesterday averaged six frames of brood. Titi and willow are in full bloom. The citrus groves will be in bloom in about one week. If the temperature drops to freezing and endures for many hours, the bees will have to forsake a large portion of their brood. The beekeeper will consequently gather a shorter crop when black gum and tupelo bloom next month and when gallberry blooms early in May. The various species of Nyssa and gallberry are the sources of the best honey made in the Coastal Plain. I might add that these honeys are hard to beat for quality.

The advocate of packing would get a more attentive audience on a day like this. Perhaps in this section packing is not needed, but the Gulf offers no protection when a "norther" blows. And northers are not uncommon in this country. In three or four days, when it is warm and sunshiny again and all the chilled brood is carried out, the beekeeper will have forgotten that it was ever cold and ridicule the idea of protection. Perhaps he is right. We need some experimental work done to lead us out of our ignorance.

February was especially conducive to brood-rearing in north Mississippi, and colonies may be expected to be strong early. Bees were noticed working in great numbers on chickweed early in the month, the first time the writer has observed this lowly flower being worked. Bees have been working maple, elm and mustard. Last year's mustard plants were in full bloom early in the month and afforded the bees great delight. Mustard is used as a green in the South.

The sweet clover in the prairie section is in excellent condition. There seems to be an exceptionally large number of new plants from seed germinated in February. If only it were all Hubam!

R. B. Willson.
Agricultural College, Miss.

* * *

In North Carolina.—At this time (March 5) spring conditions are most promising in every way. Of course, there are several things that can befall the bees or the pasturage in this state, either to reduce seriously or cut off entirely the 1922 honey crop. Frosts a little later during critical periods of developments of the flora, protracted rain or disagreeable weather in the midst of these honey flows must always be considered as possible.

However, right now bees are demonstrating the fact that they have come through the winter in fine condition where they had anything like adequate supplies to start with, or have been fed. This applies in the case of careful beekeepers who use the mod-

ern hives. Of course, following the very lean honey season of 1921, probably thousands of colonies in old box or gum hives died out even before the real winter set in and many more are showing up "dead" this spring; but those losses can very readily be counted as a "blessing in disguise," since such laggard beekeepers will have had a most impressive demonstration of the incomparable advantages of the improved hive and will adopt it far more readily.

Bees in even the weakest of the colonies that have "wintered" have been gathering pollen right along since early in January and for two weeks have evidently been getting in considerable honey from early peach or other fruit bloom and, in this section, particularly from the mistletoe, arbutus and others of the earlier flora. The maple will be blooming very soon now, and by April 1 the tupelo, black gum and holly will be coming in all along the Carolina Atlantic Coastal section. These will be followed by the gallberry in May. All these, of course, stand a chance to be curtailed or cut off entirely by cold or to have the bees kept away from them to a more or less serious degree by prolonged rains. But beekeepers are optimistic and are preparing, especially in the matter of having equipment ready at hand, to give the bees ample room for the husbanding of a bumper crop.

Wilmington, N. C. W. J. Martin.

* * *

In Utah.—We are having a severe winter on this side of the Rockies. Up to Dec. 20 the weather was very mild, and bees were more active than usual, which caused them to consume more stores than they otherwise would have done. Since Dec. 20, measured as it fell, there has been seven feet of snow, and the temperature has been as low as 24° below zero. For weeks there were more hours when the temperature was below zero than above.

There has been no weather yet for a cleansing flight, and some colonies are showing signs of dysentery. There is still on March 11 20 inches of old snow on the level.

Many colonies are on their summer stands with no protection, and there must be a severe loss in all such cases. Part of my own bees are in the cellar; but 400 colonies are outside, packed, but not as they should have been for a winter like this.

During the winter I am assistant instructor to the federal men who are taking practical bee culture at the Utah Agricultural College at Logan, and yesterday we looked over the college bees as best we could without opening the hives. We found them in fair condition but showing some signs of dysentery.

Isn't Dr. Phillips right when he advises to prepare bees every winter for the worst?

Hyrum, Utah.

M. A. Gill.

QUESTION.—What is the best way to transfer from a Standard 10-frame hive to the Jumbo? I wish to save all the brood and have the bees ready for the honey flow. I have a new Jumbo hive ready with full sheets of foundation.

Kentucky.

Answer.—Since you are changing to the Jumbo depth of frame you no doubt expect to produce extracted honey. In that event transfer two or three of the Standard combs, together with the queen, to the Jumbo brood-chamber as soon as the colony needs more room in the spring. Put the Jumbo brood-chamber on top (or below) the Standard with a queen-excluder between. Three or four days later or when the queen has begun to lay in the newly built comb in the Jumbo frames, shake all the bees off from the Standard combs which were in the Jumbo brood-chamber, to be sure that the queen is not taken away with these combs, and put them back into the Standard brood-chamber, filling up the Jumbo brood-chamber with the frames of foundation. As soon as the foundation is all drawn out, put the Standard brood-chamber on top (if it has been below) where it now becomes a super to be tiered up as other supers are added.

Age of Larvae for Queens.

Question.—After a colony is made queenless how long a time must elapse before it is impossible for it to rear another queen from the brood of the former one?

William Thomas.

Missouri.

Answer.—After nine days the brood is all sealed, so it is certain that no queens can be reared after that time. If all queen-cells are destroyed before the ninth day, the bees will attempt to rear a queen from old larvae, even those almost ready to seal, if there are no younger larvae; but these, of course, would not result in a real queen, for the feeding period would be too short.

Maples as Honey Plants.

Question.—Do maple trees have nectar and pollen or pollen only?

Gustav Stolze.

Connecticut.

Answer.—The different species of maple yield both nectar and pollen. The importance of the maples as honey plants is probably not fully appreciated. Because they bloom so early surplus honey is not often stored from this source. The red maples, the box-elder or ash-leaf maples and the silver maples are especially valuable, but bloom quite early in March and early April in the North. The sugar maple, which blooms later, sometimes yields large quantities of nectar. If the colonies are strong in the spring and the weather is favorable even for a few days when the maples are in bloom they sometimes store rapidly, sometimes gaining 20 pounds or more. This is where

GLEANED BY ASKING

Geo. S. Demuth

good wintering makes a great difference in the spring. It is not at all unusual to see strong colonies gain in their stores during bad weather in the spring,

while weak colonies in the same apiary are starving. Strong colonies are able to send a large force of bees into the field whenever the sun shines for an hour or so and it is often surprising how much nectar they are able to carry in even during bad weather. Maples often yield freely while there is snow on the ground.

Age of Brood in Concentric Circles.

Question.—On a comb having concentric circles of brood of different ages, if the outside circle is pupae, the second larvae, the third pupae and the center is empty cells where young bees have just emerged, how many days has the queen been laying on this comb?

John J. Valley.

Ohio.

Answer.—The queen has been laying on this comb for not less than 42 days. Of course, this process could be repeated so that she could have been laying on this comb much longer. You can figure this out by remembering that the brood is sealed about nine days after the eggs are laid and the young bees emerge about 21 days after the laying of the egg. The condition you describe is found only in very weak colonies or when there is but little brood-rearing, as in the spring or winter.

Feeding Honey Granulated in Combs.

Question.—What is the best way to feed up honey that is granulated in unsealed combs?

Montana.

Myra Pickering.

Answer.—By filling up the cells with water and hanging the comb in the hive, the combs of granulated honey can be fed to the bees. The cells can be filled with water by laying the combs down flat and pouring on the water from a sprinkling can, or even by pouring the water from an elevation of four or five feet. An old pail with a row of holes punched in the bottom, five holes to the inch, is excellent for filling combs with water.

Spraying When Petals Begin to Drop.

Question.—We are moving an out-apiary to an orchard. The owner says that he sprays his apple trees with lime and sulphur when the petals begin to fall. Will this be detrimental to the bees if left in the orchard at that time or should they be moved away for a few days when the trees are sprayed?

J. P. Williams.

Missouri.

Answer.—So far as known, lime and sulphur spray as used for spraying does not harm the bees in any way; but, no doubt the orchardist intends to add arsenic of lead for the spray applied when the petals begin to fall. For best results in spraying most authorities advise that the spraying be done after 90% of the petals are down. When this is done there is little if any dan-

ger of the bees being injured when arsenic is used; but, if applied when the petals first begin to fall, there is danger of poisoning some of the bees.

Combs Built Crosswise in Frames.

Question.—How can I fix the combs that are built from one frame to another so I can handle them?

A. J. Hulse.

Indiana.

Answer.—Cut each comb loose where it is attached to the adjacent frame and then fasten it within its own frame by tying it in place with cord wrapped around the frame. If the first frame can not be removed from the hive without tearing the comb to pieces, cut all comb attachments on each side of the hive, then invert the hive and push out all the comb at once. After this is done, by beginning at one side each comb in turn can be cut from the neighboring frame and fastened within its own frame.

Number of Colonies for Pollination.

Question.—How many colonies will be necessary to insure a good setting of fruit in a 500-tree orchard?

William Wadsworth.

New York.

Answer.—Much depends upon weather conditions during the blooming period, more bees being needed when the weather is unfavorable. In the West some recommend one colony per acre of orchard, but in the East it will be better to have at least two colonies per acre and more will be better.

Strengthening Weak Colonies With Young Bees.

Question.—If young bees are shaken from a comb taken from a strong colony in front of a weak colony, will they be kindly received on entering or will they be killed? Ella C. Miller.

Washington.

Answer.—Usually these young bees are kindly received early in the season, especially if there is nectar available. Not many bees should be added to the weak colony at a time, for if the number of invading bees is too large there is liable to be trouble. Later in the season, especially after the honey flow, it would not be safe to add young bees in this way, and sometimes even in the spring it may cause trouble. You can easily tell how the young bees will be received by trying only a few at first.

Stimulative Feeding in the Spring.

Question.—Is there any advantage in stimulative feeding for colonies that are not short of stores?

W. M. Hathaway.

Michigan.

Answer.—In your locality stimulative feeding for spring brood-rearing would not often be advantageous. If the bees have an abundance of stores they will expand their brood about as fast as weather conditions will permit. Stimulative feeding is sometimes needed to keep up brood-rearing for a later honey flow in localities where the main honey flow comes sometime after the natural spring brood-rearing period, as in some parts of the West and South, but where the honey flow comes early this is not often needed.

Bees Carrying Out Brood.

Question.—Why do my bees carry out some of the undeveloped brood?

T. L. Millard.

Pennsylvania.

Answer.—They are probably short of stores. It will be well to open the hive to see if they have any honey. If not, they should be fed at once. Brood is sometimes carried out from other causes, such as being chilled, but especially in the spring the carrying out of brood is often the result of famine.

To Get Rid of Crooked Combs.

Question.—If I put my old crooked built-together combs in the upper story and new combs and frames of foundation below, will the queen go below to lay eggs? If so, will they put honey in the old crooked combs or abandon them?

Indiana.

E. H. Lenning.

Answer.—You will no doubt get better results by placing the chamber of new combs on top of the old brood-chamber. It will be better still if at least one comb in this new brood-chamber is old and dark. Queens usually prefer old dark combs, and in the Standard hives they are more inclined to work upward into a second chamber, when more room is needed, than to go into one placed below. When the queen is found above, an excluder should be placed between the two stories to confine her in the new brood-chamber. Some time after the brood has all emerged below, the lower brood-chamber can be taken away. It should then be practically free of honey. If it were left on top, the bees would fill the crooked combs with honey instead of abandoning them. You could smoke the bees out of the old brood-chamber into the new, and then put a queen-excluder between, before the queen could go back if you prefer to have the new brood-chamber below; but, if foundation is used in the new brood-chamber, better combs will be built if in the upper story.

To Keep Brood-chamber Free of Honey.

Question.—For comb-honey production how can I keep the brood-chamber free of early honey to give the queen plenty of room to lay, and reduce the desire to swarm without extracting the honey?

New York.

Harold Edwards.

Answer.—Usually the trouble is in not having enough honey in the hive in the spring. Sometimes when they seem to be crowded, great slabs of sealed honey will disappear within a week and the combs filled with brood. Since it requires nearly a comb of honey to make a comb of brood, this early honey is usually not in the way of rapid brood-rearing in the spring if the colonies are strong. When the brood-chamber does become crowded with too much honey or even before, they should be given a second story of old dark combs if these are available. If these combs are partly filled with honey all the better, for the honey may be needed later. Combs heavy with honey can be lifted up into the second story and empty combs put in their place below. At the beginning of the honey flow most of the brood can be put in one story and the other taken away.

THOSE who have secured their colonies of bees and moved them home, as advised in the "Talks" in the February and March issues, will be interested to note the activity of the bees during the first warm days in April. In the South the colonies are already rearing large numbers of young and becoming quite strong. In some places they may swarm this month; but, in the North, brood-rearing will only get well under way during April. It is time now, both north and south, for beginners to become acquainted with the bees themselves and, especially in the South, learn to handle them.

Meaning of Things Seen at the Entrance.

By noting the bees at the entrance it is possible to tell several things about the colony without opening the hive. Sometimes the number of bees in flight near the entrance is much greater than at other times. These periods of excessive flight do not necessarily mean that the bees are working more than usual. After they have been confined to their hives by bad weather for some time the bees will rush out in great numbers for a cleansing flight or for a little playflight in the sunshine. Also, when young bees begin to emerge in great numbers, the playflight of these youngsters will be noticed, this usually taking place early in the afternoon. In either case this extra flight soon subsides, and the more moderate flight of the regular work continues.

Unusual activity at the entrance also occurs when bees are robbing; but, if the colony is strong and has not just been disturbed by opening the hive, there is no good reason to suspect that these extra bees in flight are robbers from neighboring colonies. Bees in robbing behave differently in flight from bees taking a cleansing flight or a playflight, and it is well for the beginner to know this difference. Unlike the inmates of the hive, robber bees are cautious and alert on entering, but heavy with stolen honey and anxious to escape when they come out. Except in the case of very weak colonies which are not able to defend themselves against robbers, and queenless colonies which sometimes cease to defend their hive, robbing is usually the fault of the beekeeper in exposing the combs too freely when opening the hives at a time when the bees are not able to find much nectar in the flowers.

By noting the regular work of the field-bees as they come and go, it is possible to judge as to the strength of the colony. By noting the manner of flight one can tell whether they are finding nectar in abundance or but little if any. Bees that are heavily laden with nectar are less alert than

TALKS TO BEGINNERS

Geo. S. Demuth

empty bees and can readily be distinguished by their manner of alighting and entering the hive. Note the number of bees entering the hive with little balls of pol-

len attached to their legs. These can easily be seen as the bees run in at the entrance, each pollen-carrier carrying two pollen pellets. The ancients thought these were tiny pebbles which the bees carried for ballast, but we now know that they are balls of pollen which the bees have gathered from the flowers and packed in the little hairy baskets on their legs. Pollen furnishes the nitrogenous portion of the diet for the rapidly growing bee larvae and is essential for brood-rearing. By noting the color of the pollen and then watching the bees at work in the fields or forest, the inquisitive beginner soon learns to distinguish pollen from different flowers since it varies greatly in color.

When to Open the Hive for Examination.

Usually it is best not to open the hives unless necessary until fruit bloom; but, by choosing a warm day when the bees are working well on some early blooming flowers, hives can be opened without injuring the colonies this month, even in the North. Colonies, that are packed for winter in such a manner that it is necessary to unpack them for examination, should be left alone until some time in May in the North, unless there is reason to believe they are short of food when, of course, they should be examined and fed if necessary. Beginners should not attempt to open hives to examine colonies when the weather is cool or when the bees are not working freely. Neither should they attempt this early in the morning or late in the afternoon at this season, for it is much easier to handle bees without being stung during the middle of the day when it is warmest and when the bees are working most freely in the fields.

How to Open the Hive.

With the smoker lighted and going well and with the bee-veil carefully adjusted so no bees can get under it, approach the hive at the side, not in front. Give a light puff or two of smoke at the entrance, just enough to subdue the guards. This is not always necessary, but it is a good precaution until one learns when it can safely be omitted. Take off the outer cover and the cushion or tray that holds the winter packing if one is on the hive, and then insert the chisel-like end of the hive-tool under one corner of the inner cover, lifting it not more than an eighth of an inch, so smoke can be blown through the crack before any bees can get out. Next, treat the adjacent corner in the same way and then slowly lift the end of the cover thus loosened, at the same time blowing smoke under it to drive

the bees down between the top-bars. The cover, with its adhering bees, should now be turned upside down at the entrance, so these bees can readily crawl into the hive.

How to Avoid Being Stung.

Only enough smoke should be used to keep the bees down between the combs and under control, since too much smoke confuses them and makes them more difficult to handle. The smoker should be going well, so it will respond with a good volume of smoke whenever needed. Smoke is needed only a part of the time. Sometimes it is necessary to use it only a few times while examining the colony, but at other times it is necessary to use it frequently. Smoke should be blown across the tops of the frames, not directed down between them. By watching the bees one soon learns when more smoke is needed. The bees should not be permitted to line up in rows between the top-bars of the frames with their heads at the upper edge, watching every movement of the operator. Whenever such a formation is seen they should be driven back with smoke. Avoid quick motions. Bees pay but little attention to slow movements, but resent quick motions. The beginner will work with greater confidence at first if he wears a pair of good bee-gloves, but later will probably not care to use them. The smoker and veil are essential. If careful about the use of smoke one can examine colony after colony without being stung if the bees are working well. If the combs are self-spacing, the whole set can be pried over toward the opposite side of the hive, by using the hive-tool as a pry, to make room to take out the first frame. Sometimes it is easier to take out the outside frame first; but in many cases it is easier to remove the second or even the third frame first on account of the character of the combs, especially if they are bulged with honey at the top. Pry the frames apart far enough so the first one can be taken out easily and then lift it gently, being careful not to roll the bees against the adjacent comb. When the first comb is out, stand it on end leaning it against the hive; or, if there is danger of robbing, put it into an empty hive or a box made to hold two or three combs. Such a box is quite handy for beginners, and its use will often save trouble from robbers, or from combs toppling over when they are stood up against the outside of the hive. It is a good plan to put the first two combs taken out into this box.

The other combs can now be taken out separately by prying each one loose in turn and pulling it away from the adjacent comb before lifting it out of the hive. To examine the opposite side of the comb, hold the frame by the projecting ends of the top-bar, bring the top-bar to a vertical position, then turn the comb using the top-bar as a pivot, and finally bring the frame back to a horizontal position but upside down. Reverse this process to bring the frame back right

side up ready to be put back into the hive. This movement keeps the comb in a vertical position while being reversed. It is not always necessary when frames are well wired, but it is a good habit to form when first learning to handle the combs.

What to Look for Inside the Hive.

The outside combs should be heavy with honey if the colony is well supplied with stores while most of the brood is in the middle of the hive. In the South strong colonies should now have brood in all the combs except possibly the two outside ones, but in the North brood will usually be found only on two or three frames early in April.

On a comb taken from the middle of the brood-chamber, there is usually some sealed honey in the upper corners, the cells containing the honey being elongated, so this portion of the comb is thicker than the rest of it. Just below the sealed honey there may be a little recently gathered honey not yet sealed over. Just below the honey there may be a narrow band of cells containing pollen packed in open cells. In the middle of the comb look for another area of sealed cells, the cappings being brown in color and so regularly formed that the outline of each cell is clearly shown. This is sealed brood, as may easily be proven by tearing away some of the cappings, exposing to view the pupae within the cells. Note the difference in the appearance of the cappings over the brood and those over the honey. Somewhere within this area of sealed brood there may be some young bees emerging from the cells after cutting away the capping. In the open cells just beyond the sealed brood, look for the large larvae coiled against the base of the cells. Beyond these will probably be found smaller and smaller larvae toward the edge of the comb until finally it is difficult to see them. If the bees are behaving well, it will now be safe to lift up the bee-veil to permit better vision, which will probably be necessary to see the tiny eggs in the cells beyond the smallest larvae. To see these, hold the comb so the light from the sun comes over the shoulder and shines into the cells, and then turn the comb until the strong light strikes the base of the cell. After once having seen them it is no longer difficult even when looking through the bee-veil.

Note the uniformity in the position and the distribution of the eggs, one in each cell as far as the queen has gone in her work of egg-laying. This uniformity indicates a vigorous queen. This concentric arrangement of the brood of different ages is found only early in the season before there is much brood and in colonies that are too weak to rear brood extensively, for in strong colonies later in the season the queen sometimes fills a comb with eggs within two days so the brood on the entire frame is practically the same age. This should be the condition now in the South, while in the North the concentric arrangement is the rule for April.

Beginners are usually surprised to note the dark color of the brood-combs. This is due to their age and the accumulation of portions of the cocoons spun by the young bees while in the pupal stage. These dark combs are just as good as new ones for the brood-chamber, if not better.

Some of the cells have a greater diameter than others, the smaller ones being about one-fifth inch in diameter and the larger ones about one-fourth inch. These smaller ones are called worker-cells because worker bees are reared in this size, while the larger ones are called drone-cells because drones are reared in them. There should not be more than a few square inches of drone comb in a hive, this usually being in the lower corners of the frame. No drone brood is reared in normal colonies until they become strong in the spring. The large drone larvae can readily be distinguished from worker larvae, and the sealed drone brood has peculiar projecting convex cappings quite different from sealed worker brood. The adult drones, if any have emerged, can easily be distinguished from the workers by their larger size, being thick, heavy-set bees with large, powerful wings. They are not armed with a sting and can be picked up with the fingers with perfect safety. The drones are the male bees.

Queen-cells are built separately or in clusters of two, three or four cells. They project from the comb in a vertical position, resembling a peanut shell in size and appearance. Queen-cells are built only when the colony is preparing to swarm or when a young queen is needed to supersede the old one.

If each comb is carefully examined on both sides the queen can be found. She is the mother of the entire colony, her sole business being that of laying all of the eggs to produce the many thousand workers, the drones and at swarming time the young queens. She can readily be distinguished by her larger size and her long tapering body. Sometimes she will continue her work of egg-laying while the operator is holding the comb, especially if the bees have not been frightened by too much smoke or rough handling.

How to Clip the Wings of the Queen.

It is a good plan to clip the wings of the queen before swarming time to prevent the swarm going away if it issues when there is no one at home. To do this pick her up by grasping her wings between the thumb and forefinger of the right hand, then transfer her to the left hand where she is held by grasping her feet (several of them) or thorax lightly between the thumb and forefinger. Now with the right hand pick up a pair of small scissors and carefully cut off about two-thirds of both the wings on one side, then drop the scissors, take hold of the remaining wings with the right hand and set the queen on her feet back on the comb. This does not injure the queen if it is carefully done.

Examination Reveals Condition of Colony.

An examination of even a few of the brood-combs tells many things about the condition of the colony. By estimating the amount of honey in each comb the operator can tell whether there are enough stores for safety. There should be enough honey to fill completely at least two or three combs constantly on hand as a reserve supply except during a honey flow when the bees are gathering freely from the flowers. If there is brood in various stages of development in compact form and uniformly distributed, the colony has a vigorous queen. It is not necessary to see her to know this. If the combs are all nearly filled with brood, honey and pollen, the colony is strong enough for a second story or the supers if in the South. The presence of drone brood in the lower corners of some of the combs indicates that the colony is strong and prosperous. The presence of queen-cells having larvae or pupae in them is an indication either that the colony is preparing to swarm or is rearing a young queen to supersede the old one. In the spring if the colony is prosperous, the building of queen-cells usually means that a swarm will issue within a week.

Important Things To Do in April.

In the northern states colonies that have plenty of stores at this time will need no further attention until about the first of May, except to see that the cover fits down snug and warm and that the entrance is blocked down to an opening about three-eighths by two inches when it is cold. In the southern states, brood-rearing being well under way, the most important things this month are to see that the stores do not run low and that the bees have all the room they need for brood-rearing. If feeding is necessary, the feed can be given as described last month. If more room is needed, a second story should be given without the queen-excluder between if extracted honey is to be produced or even for comb honey if the main honey flow does not come until later. This second story given early usually holds back swarming, at least until the beginning of the main honey flow.

Those who expect to start colonies from package bees, if in the latitude of Pennsylvania, Ohio, Indiana and Illinois, should arrange to have the bees arrive soon after the middle of April. For New York, Ontario, Michigan, Wisconsin and Minnesota it is usually better to have the bees arrive about the first of May. When the bees arrive they should be put into the hive according to directions sent with the package. Combs containing honey and pollen or even empty combs are much better to have the package bees on than frames filled with foundation; but, if such combs are not available, frames containing full sheets of foundation can be used, the bees, however, being fed a pint of sugar syrup every day or two until they are able to obtain nectar from the fields.

OUR older readers may recognize that the story I am about to tell of a wonderful and not only prompt, but "long-distance," answer to prayer, is one I have told already, perhaps more than once. After my "craze," as some people called it, for starting Sunday schools I started a sort of Sunday

school in our county jail. Medina had sa-
lons at that time, and, as a matter of
course, there was quite a class in our jail
most of the time. The crowd I found there
started to make fun of me with their rude
jests and even blasphemous and filthy
stories. One day when they would hardly
listen to my talk I got hold of a piece of
paper and pinned against the wall, after I
had written on it, "Blessed are the pure in
heart, for they shall see God." It seemed to
have a good effect; and when I got them to
singing some of those beautiful Gospel
Hymns (for this was when Moody and San-
key first became known to the world at
large) they soon learned to enjoy the singing
if nothing else. One of them was a boy or a
man, perhaps 20 years of age, who had been
in the penitentiary for stealing chickens; but
as soon as his time was out he was caught
again for the same offense, and was on his
way to the penitentiary. He openly boasted
that they might carry his dead body back to
that "old pen," but they would never carry
him alive. It somehow happened that he was
kept in jail three or four months, and he
and I became pretty well acquainted. I
visited him not only every Sunday, but
often during the week, and it was finally my
privilege to get him to kneel down on the
stone floor and utter the prayer, "God, have
mercy on me a sinner." He had no money
to employ a lawyer. I said to him, "Fred,
the great God above is worth more than all
the lawyers on the face of the earth. In-
stead of trying to screen yourself, you tell
the whole truth and God will take care of
you."

Fred did so, and the judge astonished
the court by saying, "Gentlemen, we send
our boys to the state prison to make them
better. I will personally guarantee that this
young man will be 'better' without any pen-
itentiary sentence."

The next morning Fred surprised me by
coming into my store and saying, "Mr.
Root, it turned out just as you said, and I

OUR HOMES

A. I. ROOT

Blessed are the pure in heart, for they shall see God.—MATT. 5:8.

Who hath measured the waters in the hollow of his hand, and meted out heaven with the span?—ISAIAH 40:12.

What manner of man is this, that even the winds and the sea obey him?—MATT. 8:27.

Let him know that he which converteth the sinner from the error of his way shall save a soul from death, and shall hide a multitude of sins.—JAMES 5:20.

am here a free man. You are the only friend I have in this town, and almost the only one I have in the world. Can you set me at work at something?"

I started him at setting type for our little bee journal, and a considerable part of Gleanings in Bee Culture away back when it was young bore the imprint of the type he

set. I was then in the jewelry business, but was not yet able to buy a safe in which to store my valuables at night, and so I had an apprentice sleep in the store close up to the showcase. This apprentice fell sick, and so I asked Fred to take his place. He did not say very much; but just as I was going home that night he leaned against the show-
case and said, "Mr. Root, how much are all these watches and other things worth which you leave here over night—a hundred dollars or more?"

"Yes, Fred, two or three hundred dol-
lars."

"And you want me to sleep here and take care of them?"

I nodded assent, and then he said, with trembling voice, "Mr. Root, do you consider that just a few weeks ago I would have jumped at the chance of loading this up and getting away off before morning?"

I smilingly remarked, "Fred, are you at all afraid that your old temptations will come back?"

Then he began to cry as he leaned over the showcase. I do not know that I ever saw a man cry like that before; but he finally stammered out, "Mr. Root, so long as God lets me live I will defend everything that belongs to you or yours, even if it takes my last drop of blood."

Fred afterward carried on successfully one of our out-of-town Sunday schools. Let me now digress a little:

People thought me crazy away back in those early days when I paid \$20.00 for one queen bee; and when I took a chicken thief out of jail and installed him in my store to look after the watches and jewelry by night, they for the most part lost confidence in me. The story got to going around town, and all at once I found I could not borrow a cent of my friends right or left; and yet that first brick factory had its walls up, and was ready for the roof. The man who furnished me the brick had agreed to give me reasonable time; but he became alarmed,

and finally said that if he could not have his money by a certain date he would make me trouble. My property was all mortgaged, and my good old father's farm was mortgaged all it would bear. Then I said, somewhat in desperation, that I would let the building stand without any roof over winter, if people were so afraid of me. Of course I prayed over it, but as yet I had received no wonderful answers to such a prayer. To make the matter worse, I had been getting other boys out of jail; but they had not all turned out like poor Fred. Some of them who were addicted to drink made me quite a little trouble and worry, and even Mrs. Root said, "Dear husband, haven't you been a little reckless in getting those boys out of jail who worry you so much and wear you out?"

I replied as before, "Sue, we will just kneel down and ask the dear Savior if I have been wise or otherwise;" and I asked Him to indicate it by opening the way for the money to pay the man for the brick, and which I had told him would be ready by next Thursday.

Then I went to sleep feeling sure I was right. The next day a stranger came, very anxious to see what I had done to encourage bee culture. He was particularly anxious to see a colony of bees taken from a box hive and transferred to a frame hive. Altho it was the wrong time of year, and I was exceedingly busy, I had a colony transferred. The new factory was half a mile away from my store in town. On the way back he surprised me by asking me if I was having any financial trouble. I stopped suddenly, and then he apologized by saying, "There, Mr. Root, I fear I have taken too much liberty; but I wanted to say that if you were in need of money just now I could, perhaps, repay you for all the pains you have taken to show me around when you are so busy."

I replied, "My friend, are you a professing Christian?"

He replied that he was not.

"Then," said I, "you certainly ought to be, for God has sent you here in answer to prayer."

Then I told him all the particulars, and in explanation he said something as follows:

"I subscribed for your little bee journal, and was very much pleased with it. One night I could not sleep because I got to thinking of you, and wondering if you had the funds to go on with your experiments. Then I thought that nothing else in the world would please me so much as to make you a visit. Imagine my surprise when I mentioned it to my father next morning, and he replied something as follows: 'Why, George, this is indeed lucky. There is a lot of tanbark down in the city of Cleveland which has been offered to me at a very reasonable price. But I dare not close the bar-

gain without seeing it. Now, you know as much about the tanbark we handle as I do. You go right down there and look it over, then go down to Medina and see Mr. Root'—and here I am."

Said I, "Mr. Goodhue, if you are not a Christian you ought to be."

I think his reply was just a brief statement, "Like enough."

I am glad to tell you that he shortly afterward not only became a follower of the Lord Jesus Christ, but a Christian worker. I told him when the brickmaker wanted his money; and after figuring a little he said, "I think I can be sure to have it here by next Thursday if not before."

Of course my good father was greatly worried by the state of affairs. When I told him of the above he first said, as everybody else did, "Why, that man is not going to send you a lot of money without security."

But I still insisted that there would be no failure; but father replied, "Why, the mails will be delayed. This is a bad time of the year, and trains may be delayed."

I replied, "Father, God holdeth the winds and the waves in the hollow of his hand."

I think that father then caught a glimpse of my faith, for he went back home smiling and happy.

Thursday morning came, but no hint of the money. But I did not worry. I told the young lady who started to open the pile of mail, "I am expecting a letter from Quebec in this mail. When you come to it let me have it."

In a few minutes a letter came sailing over to my desk with the remark, "Here is your Quebec letter." I opened it and read, "Pay to the bearer, A. I. Root, the sum of \$500 in gold, and charge to the account of George O. Goodhue."

Just a little later along came the brickmaker with a severe look on his face, saying, "How about that money?" I replied smilingly that it was ready for him. His countenance changed in a minute. Said he, "Why, Mr. Root, have you got it?" I assented, and went over to the bank with him. You see his mind had been poisoned by so many telling him he would never get his money. I think the amount was a little over \$400. The bankers were surprised; but I think it was a glad surprise to some of them. The cashier was a particular friend of mine; and I said to him, "Robert, I suppose it is against your rules, but I should like to borrow that check for a little while."

He smilingly asked what I wanted to do with it. I told him I had been telling the boys over in the jail the story of my lack of finances, and how money was coming, and coming without my giving any security, from a man away off in Quebec. Of course this was soon noised abroad all over the town; and those who had refused me

accommodation were surprised that a perfect stranger away off in Quebec should lend me money without security when none of my own townspeople would take the risk.

Let us go back a little. You have doubtless read these stories of answers to prayer. First, when I started out to unite our Medina churches I prayed over it, and one of God's minister servants changed his mind almost in an instant. Second, when I had that strike in regard to the tobacco matter, quite a respectable crowd of people changed their minds almost in an instant. It seems that the dear Savior was teaching me faith by degrees—first the single individual, then a crowd of people, then by a good man away off in California, and finally a good friend sprang up away off in Quebec and furnished me money without security, and made it reach me on a certain day. The Holy Spirit seemed to be leading me along these paths by easy steps as one would teach a child. When I asked the Lord if I was on the right track in kneeling with those poor boys from the jail he answered my prayer so swiftly that it almost frightened me.

Now a word in regard to those in the jails of our land. Just recently I read of a guilty criminal who was on his way to the penitentiary. The judge was a professing Christian, and he finally said to the Christian man who caught the culprit red-handed, "Now, my good friend, I believe I will turn this matter all over to you. In fact, it rests with you to go on with the trial or not." And this Christian man turned to the guilty man and said, "Look here. Billy Sunday has just commenced a series of meetings in our city. You go and hear him. Do not miss a session; and if you will do it faithfully, when the meeting closes you are a free man."

What do you suppose happened? The poor fellow gave his heart to the Lord, and is now following Sunday and helping the revivalist in his work.

Can the Ethiopian change his skin, or the leopard his spots?—JERE. 13:23.

Hubam in Florida.

No clover of any kind, not even alfalfa, will stand our hot, wet summers. A few cases have been found where it *sometimes* gets through; the season isn't long enough. But the Hubam is O. K. Nov. 1, 1921, I sowed four rows, perhaps 100 feet long. On March 1, 1922, it is higher than I can reach—some of it—and full of bloom and bees. The entire growth was made during December, January and February. We are going to sow it on all our potato ground as fast as the potatoes are dug. We shall probably spade it all under to enrich the ground for potatoes next winter. Our new potatoes are wanted (once more) faster than we can furnish them, at 75c for a ½ peck basket.

Mr. A. I. Root, Bradentown, Florida.

Dear Mr. Root:—Who am I, to be writing you now! What can I, who am so much younger, say at this time to you, who has lived for so long so near to God? How can I tell you where to turn for comfort? Ah, dear friend, whom I do not know, God comfort you in these days of loneliness! Well I know where your faith lies, and how firm and great is your belief in the "many mansions." But for the inexpressible personal loss, may God Himself comfort and sustain you.

I never thanked you for your note of last fall. I do so now. The regret that I felt at that time because you were not to pass thru Nashville has deepened now. How I wish I might have met her. How I hope I may yet meet you and tell you more fully what now I can only suggest, my deep admiration for you and for her memory, and my heart full of sympathy for you today.

Over against your sorrow you have a wealth of memories—what rich lovely ones they must be!—and an even greater wealth of faith and hope. To these may I add, humbly but affectionately, my own deep sympathy and that of my husband. God bless you! Grace Allen.

Route 9, Nashville Tenn., Dec. 15, 1921.

TO A. I. ROOT

On the Sudden Death of Mrs. Root, Aged 80.

A HOMEMAKER TAKEN WHILE AT WORK.

How steadily God's winds go blowing

Wherever they are sent!

I had not thought about her going

Before you went.

But who can trace the holy thought

Whereby God's purposes are wrought?

Perhaps He watched her working there,

And said, "Come now, dear Child,

I've other work anotherwhere!"—

And took her hand, and smiled.

(For in God's plan how can we know

What service still may be?—

What bread to bless, what fields to sow,

What shores of what great sea

To watch for homing sails?—What room

To fill with some undreamed-of bloom?

What oil to pour, what lamps to trim

And in what windows high

To set them on old roadways dim

To light God's children by!)

For sixty years, when sunset flame

Had homeward set your feet,

You found her there and called her name

And found home very sweet.

And when at close of longer day

Again you wend a Homeward way—

And find her there—what tho you stand

Rapture-hushed and dumb?

She will take you by the hand

And tell you where you've come.

She will call you by your name

And say how glad she is you came.

And say, "Great things are here to do!—

In soul and star and loam—

And here is God!—And here are you!—

And here is Home."

—Grace Allen.

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H. G. ROWE, Mng. Editor.

Sworn to and subscribed before me this 17th day of March, 1922. H. C. WEST Notary Public.

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		Sophus Olsen... .25	A. O. Hendrick... 1.00
		W. S. Pangburn... 1.00	David E. Wood... 2.00
		W. B. Barnard... .50	Fred Canoles... 1.00
		E. W. Kriwitz... .10	Alameda Co. Beekeepers' Assn... 35.00
		D. L. Ulman... 1.00	per C. W. Hartman... 35.00
		S. Heashman... .25	W. Denison... .50
		Flora McIntyre... 1.00	W. R. Elwood... .25
		G. T. Rawls... .25	

Miss M. L. Bland	1.00	F. C. Wiggins...	1.00	Northern Pennsylv.	W. C. Conrads..	.50
T. P. Ferhuse...	.50	Elmer Bengé	1.00	vania Beekeep-	S. O. Gordon....	.50
G. Ferhune	1.00	Name Unknown...	5.00	ers' Assn....	Dr. A. Wright....	1.00
C. F. Coombs....	1.00	Geo. W. Bader....	.50	Inland Empire	L. B. Smith....	.50
J. R. Kennan....	1.00	J. H. Beatty....	.50	Beekeepers' As.	J. W. Jackson...	.50
G. H. Nichols....	.25	Chris. Allen....	.85	E. G. Brown....	C. C. Stone....	.50
E. W. Foster....	2.00	M. W. Beers....	1.00	A. E. Thomas....	T. J. Hughes....	.25
F. R. Helmick....	.25	Fred F. Teets....	.10	Frank Murray...	W. O. Victor....	5.00
Mrs. S. R. Dillman	.25	E. Welton....	1.00	I. B. McMurtry...	C. E. Welty....	.50
Henry S. Nixon...	2.00	J. V. Bablock....	.50	Floyd Markham..	P. S. Nichols....	1.00
C. F. Rife....	1.00	Burr Leslie....	1.50	C. H. Stranger...	M. B. Antle....	.50
J. H. Allison....	1.00	S. F. Ranney....	1.00	James A. Green...	F. P. Nash....	1.00
J. F. Moore....	5.00	T. Hackbarth....	.50	Raymond Green..	Albert T. Allen..	.10
Edw. Sterner....	1.00	H. C. Coventry...	1.00	A. O. Green....	L. S. Jackson....	1.00
E. Lenark....	1.00	Jos. Lindt....	1.07	John Stotts....	Montg. Co. B. K.	
Robert Kuhn....	.50	J. M. Crudgington	1.50	S. B. Fralicher...	A. of Ohio....	26.35
P. Petrequin....	.50	C. Mawhinney...	1.00	J. E. Harris....	E. T. W. Baur....	1.00
Mr. and Mrs. W.		J. R. Bullock....	3.00	Grace V. Smith...	Alabama State	
H. Zent....	2.00	R. Haworth....	1.00	J. M. Griffith....	B. K. A....	12.20
F. T. Godfrey....	2.00	C. W. Hayes....	1.00	F. M. Snider....	D. L. Calvert....	3.00
E. P. Tremper....	2.00	Emmett Deere....	2.00	Mrs. E. F. Fennell	F. W. Steele....	1.00
W. W. Foster....	1.00	Mary L. Comstock	1.00	E. F. Koch....	I. Steddum....	1.00
L. Ginter....	.50	Geo. Kay....	2.63	C. E. Fitzpatrick	M. C. Thompson..	1.00
Jno. H. Kitchen...	1.00	Wm. Phalen....	.25	J. D. Caldwell....	S. C. Rising....	1.00
Jas. Maxwell....	1.00	G. H. Bufum....	5.00	F. H. Keeley....	Worcester Co. B.	
G. J. Giersmann		H. Rauchfuss....	5.00	A. Herron....	K. A., Mass....	16.00
and family....	1.00	W. Lindenmeier..	2.00	Mrs. Manspeaker..	Chas. Snack....	5.00
Wm. McPherson...	.75	C. E. Drexel....	2.00	J. E. Winter....	F. W. Schroeder..	1.00
J. C. McCubbin...	1.00	F. E. Johnson....	2.00	H. A. Todd....	R. B. Willson....	5.00
H. L. Pearson....	.25	J. R. Miller....	1.00	M. C. Hiskey....	F. A. Koch....	.25
A. F. Marble and		Mrs. Parker....	.75	C. S. Sieg....	J. W. Jackson....	1.00
Geo. Dodds....	1.00	Newton Boggs....	5.00	C. E. Wallace....	Mr. and Mrs. A.	
Ezra Mayer....	1.00	H. D. Rauchfuss	1.00	John Hansen....	Allen....	5.00
Jesse Nigh....	.50	M. L. Henthorne	1.00	C. E. Lindsay....	Geo. H. Rea....	3.00
C. E. Payne....	1.00	A. J. Kritchfield.	1.00	C. E. Kendle....	R. E. Rydberg....	1.00
T. McLaine....	1.00	Isaac Walter....	2.00	John Pugh....	H. G. Rowe....	5.00
J. H. Zak....	1.00	Dr. C. P. Gillette	1.00	F. C. Drexel....	Geo. S. Demuth..	10.00
Clyde W. Reed....	1.00	Mrs. M. Doubleday	.50	Minnesota Bee-	A. I. Root....	20.00
W. J. Eaken....	.20	M. Crawford....	1.00	keepers' Assn..	E. R. Root....	20.00
C. M. Alvord....	1.00	Fox River Bee-		keepers' Assn..	H. H. Root....	10.00
J. S. Scofield....	1.00	keeping Assn....	5.00	F. B. Loomis....		
H. D. Tennant...	1.00	Dadant family...	25.00	R. A. McKee....		
Gordon Gore....	.10	Mrs. G. B. Daly..	1.50			
R. J. Radtke....	1.00	Wm. A. Baker....	1.00			
A. A. Woodward...	1.00	Louis H. Scholl..	10.00			
M. C. Osborne....	.50	B. A. McKee....	2.00			
P. N. Townsend...	.25	W. C. Conrads...	.50			
J. I. Ulrich....	1.00	S. C. Gordon....	.50			
J. D. Hull & Bro.	1.00	Dr. A. Wright....	1.00			
O. I. Lewis....	.50	L. B. Smith....	.50			
Miss C. E. Jordan	1.00	J. W. Jackson....	.50			
Mr. and Mrs. Al-		C. C. Stone....	.50			
fred Hengsh....	1.00	T. J. Hughes....	.25			
W. C. Boor....	2.00	P. T. Ulman....	1.00			
W. H. Miller....	1.00	J. W. Watson....	1.00			
S. E. Johns....	.20	T. W. Cowan....	3.74			
A. G. Karche....	1.00	Illinois State Bee-				
G. Brundage &		keepers' Assn....	20.00			
Sons....	1.00	Wisconsin State				
Scharff Co....	1.00	Beekeepers' As.	40.00			
Nina Scott....	1.00	L. C. Jorgensen..	1.00			
Mr. and Mrs. F.		E. Hassinger, Jr..	1.00			
D. Linneous....	.50	Mrs. G. Schmidt..	1.00			
Axel Holst....	5.00	Ivan Whiting....	1.00			
B. J. Thompson...	1.00	A. G. Gall....	.50			
Lorain Co. Bee-		Conn. Beekeepers'				
keepers, per E.		Assn., per L.				
M. Vincent....	5.00	St. Clair Burr..	50.00			
C. Schoonover...	.50	E. R. Smith....	1.00			
C. W. Runsey....	.79	H. Perkins....	1.00			
W. H. Lewis....	1.00	T. Winchell....	1.00			
J. N. Beckley....	1.00	R. Bonoveas....	1.00			
E. J. Ladd....	3.00	C. Hughes....	1.00			
C. Payne....	.50	H. A. Stearns....	2.00			
J. F. Martin....	1.00	E. C. Ficheman..	1.00			
W. M. Forster...	1.00	Richard Horn...	1.00			
Lide Martin....	1.00	R. Jenkins....	1.00			
Bernard Kunz...	1.00	M. H. Mendleson	1.00			
A. McCulley....	1.00	Sheboygan Co.				
C. Havelope....	1.00	Honey Prod.				
J. R. Spence....	1.00	Assn....	10.00			
G. Henderson...	1.00	G. F. Helder....	1.00			
M. H. Courtney...	1.00	W. Osborn (De-				
C. Hanslope....	2.18	catur Co. Bee-				
M. B. Hinton...	1.00	keepers' Assoc-				
G. W. Troxell....	.50	iation, Iowa)..	2.00			
Ulrich Denehl...	2.00	A. C. Hardy....	1.00			
Oregon State Bee-		W. O. Vitor....	5.00			
keepers' Assn..	18.00	W. E. Joor....	2.00			
Sires & Sires...	1.00	Mr. Christensen.	2.00			
Iowa State Bee-		J. W. Wilsey....	1.00			
keepers' Assn..	25.00	F. H. Thiele....	.25			

Total\$1233.18

GONE HOME.

Dr. C. C. Miller of Marengo, Illinois.

(By Frederick Webley, M. D., E. San Diego, Calif.)

Now he has passed beyond the bourne, we know
 Why brothers of the Bee Craft loved him so.
 As Homer said of one: "It was his plan,
 To live beside the road, a friend to man."
 He did not seek for honor or renown,
 But as a knight sought virtue as a crown.
 He showed us how to leave the city's strife
 And free, with Nature, live the Simple Life.
 At Home with friends, his garden and his bees
 He found his work and happiness and ease.
 In heart he knew the consecrating grace
 From God's own heart, his strong abiding place.
 Kindly and gentle, noble and sincere;
 His life, in passing, left its fragrance here.

He was a Master of the Gentle Craft
 The happy bee folks follow. Once a draught
 He drew, in his bright youth, from Nature's well
 (Sweet as the Hippocrene, poets tell,
 Flowed from Parnassus), and his heart indrew
 Love for the Beautiful, the Good, the True,
 And love for all things living, flowers and trees,
 The birds and furry folk—but most the bees.
 Was it from them he glimpsed of God's design
 Of Social Brotherhood, but made divine?
 For him a host of workers, on swift wings,
 Brought sweetness from the living heart of things;
 It seemed that all the bees of Arcady
 Gathered to help him and his skill repay.

What meetings and what greetings his to know.
 Where blessings, sweet as milk and honey, flow.
 Huber and Langstroth welcome him as one,
 And Cowan, with the gentle Hutchinson,
 'Tis sweet to find that Faith is lost in Sight,
 And Hope fulfilled in infinite Delight.
 'Twas so with him when he had crossed the stream
 He met the loved and lost ones of his dream;
 And One, his Angel, smiling, took his hand
 And led him upward to the Radiant Land.
 There will he rest, his earthly labors done.
 For him the Life Immortal—just begun.

Classified Advertisements

Notices will be inserted in these classified columns for 50c per line. Advertisements intended for this department cannot be less than two lines, and you must say you want your advertisement in the classified column, or we will not be responsible for errors. Copy should be received by 15th of preceding month to insure insertion.

REGULAR ADVERTISERS DISCONTINUED IN GOOD STANDING.

(Temporary advertisers and advertisers of small lots, when discontinued, are not here listed. It is only regular advertisers of regular lines who are here listed when their advertisements are discontinued when they are in good standing.)

H. E. Graham, Rosedale Apiaries, P. O. Watkins, Wm. Vollmer, A. S. Tedman, Southland Apiaries, A. H. Patch, Miller Box Mfg. Co., C. B. Howard, A. L. Healy, J. N. Harris, Griggs Bros. Co., H. B. Gable, C. N. Flansburgh & Son, H. R. Fisher, Geo. W. Coltrin & Son, Luther Burbank, R. H. Shumway, D. Hill Nursery Co., Condon Bros., Rhodes Mfg. Co., S. M. Isbell & Co., I. Putnam, James Vick's Sons, Storrs & Harrison, May Seed & Nursery Co., Smith Typewriter Sales Co., C. M. Elfer, Valley Apiaries.

HONEY AND WAX FOR SALE

400 LBS. of best crude beeswax in cakes. Edw. A. Winkler, Joliet, Ills.

FOR SALE—Fine quality white honey in 60-lb. cans. F. C. Gentz, Blackwell, Wisc.

FOR SALE—White clover and aster honey in 60-lb. cans and ten-pound pails. John S. Field, Brooksville, Ky.

FOR SALE—Clover, amber and buckwheat honey, 60-lb. cans and 5 and 10-lb. pails. C. J. Baldrige, Kendaia, N. Y.

FOR SALE—10 cases 120 lbs. each clover extracted honey, \$15.00 per case f. o. b. Grafton. F. E. Schriver, Grafton, O.

FOR SALE—Buckwheat honey in second-hand cases, 120 lbs., \$9.60 each. Sample, 10c. R. V. Cox, Sloansville, N. Y.

FOR SALE—25 tons fine extracted white clover honey at 12c. Comb honey prices on request. Dr. E. Kohn & Son, Grover Hill, Ohio.

EXTRA FANCY clover honey, well ripened, in new cans, per case 120 lbs., net \$15.50. Write for quantity prices. Edw. A. Winkler, Joliet, Ill.

FOR SALE—12,000 lbs. of choice white clover honey, well ripened, put up in new 5 and 10 lb. pails. Sample 25c. W. B. Wallin, Brooksville, Ky.

FOR SALE—Buckwheat honey in 60-lb. cans, one can to case, liquefied, \$5.40; two cans to case, granulated, \$9.60. John J. Lewis, Lyons, N. Y.

FOR SALE—Seven cases clover honey that has gone through the capping melter at \$7.50 per case of two 60-lb. cans. J. D. Beals, Oto, Iowa.

FOR SALE—White honey in 60-lb. cans, also West Indian in 50-gal. barrels. Samples and price on request. A. I. Root Co., 23 Leonard St., New York City.

FOR SALE—Extracted honey, clover, 15c per pound; amber, 10c; two 60-lb. cans to case; amber in barrels, 8c; in five-case or five-barrel lots, 5% off; in ten-case or ten-barrel lots, 10% off. H. G. Quirin, Bellevue, Ohio.

HONEY FOR SALE—In 60-lb. tins, water-white orange, 15c; white sage, 13c; extra L. A. sage, 11c; N. Y. State buckwheat, 10c, for immediate shipment from New York. Hoffman & Hauck, Inc., Woodhaven, N. Y.

FOR SALE—White clover honey in 60-lb. cans at 12c per lb., same honey in 5-lb. pails at \$10.00 per doz. f. o. b. Waterville, Ohio. F. W. Summerfield, Waterville, Ohio.

FOR SALE—Limited amount choice white clover basswood honey in 10-lb. pails cases of 6 pails each. Write for prices. The A. I. Root Co., 230 W. Huron St., Chicago, Ill.

FOR SALE—Extra-choice extracted white clover honey, put up in new 60-lb. cans and 5-lb. pails. Sample 20c, same to apply on first order. David Running, Filion, Mich.

RASPBERRY honey, blended with willow-herb, put up in 60-lb. cans. In order to close out quickly will sell for 12c a lb. We have some raspberry mixed with a small quantity of goldenrod for 10c a lb. Sample of either kind, 20c, which may be deducted from order for honey. Elmer Hutchinson & Son, Lake City, R. D. No. 2, Mich.

HONEY AND WAX WANTED.

WANTED—Fancy white clover comb honey. Quote price. C. J. Morrison, South Bend, Ind.

WANTED—Honey, section, bulk comb and extracted. Elton Warner, Asheville, N. C.

BEESWAX WANTED—For manufacture into SUPERIOR FOUNDATION. (Weed Process.) Superior Honey Co., Ogden, Utah.

WANTED—Shipments of old combs and cappings for rendering. We pay the highest cash and trade prices, charging but 5c a pound for wax rendered. The Fred W. Muth Co., Pearl and Walnut Sts., Cincinnati, Ohio.

WANTED—Beeswax. We are paying 1c and 2c extra for choice yellow beeswax and in exchange for supplies we can offer a still better price. Be sure your shipment bears your name and address, so we can identify it immediately upon arrival, and make prompt remittance. The A. I. Root Co., Medina, Ohio.

FOR SALE.

ROOT'S GOODS AT ROOT'S PRICES. A. W. Yates, Hartford, Conn.

USED 60-lb. honey cans, 60c a case of two. Matt Smith, Preston, Iowa.

HONEY LABELS—New designs. Catalog free. Eastern Label Co., Clintonville, Conn.

BEEHIVES in flat, made of No. 1 long leaf yellow pine. R. E. Jordan, Jr., Halls, Tenn.

YOU will make no mistake in ordering your comb foundation of E. S. Robinson, Mayville, N. Y.

FOR SALE — "SUPERIOR" FOUNDATION, "quality unexcelled." Let us prove it. Order now. Superior Honey Co. Ogden, Utah.

PORTER BEE-ESCAPES save honey, time, and money. Great labor-savers. For sale by all dealers in bee supplies. R. & E. C. Porter, Lewiston, Ill.

ADAPTABLE BEEHIVES are sound in principle and are practical. For free information address Geo. P. Wood, Peekskill, N. Y.

FOR SALE—Good second-hand 60-lb. cans, two cans to a case, boxed, at 60c per case, f. o. b. Cincinnati. Terms cash. C. H. W. Weber & Co., Cincinnati, Ohio.

FOR SALE—Capping melter and separator can, from Ham Bros. In good order, used one season only, f. o. b. Hawkestone, \$12.00. A. S. Millard, Hawkestone, R. D. No. 2, Ont., Can.

ROOT'S bee goods at factory prices. Everything for the beekeeper. Ask for catalog. S. M. Wilkes & Co., W. E. Tribbett, Asst. Mgr., Staunton, Va.

FOR SALE—25 dovetailed honey supers with all fixtures. A quantity of cartons for sections. All fine shape. Number of feeders and queen-excluders. All for \$10.00 cash. Frank Quackenbush, Harvard, Ill.

FOR SALE—55 two-story standard metal-covered, 10-frame beehives, nailed and painted, frames nailed, wired with full sheets of foundation. In lots of five or more, \$5.00 each f. o. b. Mobile. H. A. Goering, Crichton, Ala.

FOR SALE—25 eight-frame Root hives, slightly used, clean, two-story high, metal covers and with under covers, Danz. bottoms, newly painted, in one lot, \$75.00. A rare bargain. Edwin G. Baldwin 55 Division St., Ashtabula, O.

FOR SALE—To further reduce our large equipment, we offer a full line of NEW and SLIGHTLY USED Jumbo and standard Langstroth bee supplies of Root manufacture. We also offer full colonies of bees in Jumbo and Langstroth hives. Complete list free. We can save you real money. No disease. The Hofmann Apiaries, Janesville, Minn.

FOR SALE—56 new dovetailed 10-frame comb honey supers complete with six section-holders and two shallow extracting frames to each super. All nailed and painted two coats. 50 never been used; also 3350 Root sections for same, $4\frac{1}{4} \times 4\frac{3}{4} \times 1\frac{1}{2}$. We offer these choice goods all securely crated and delivered f. o. b. cars Epes, Ala., for \$90.00. Can you beat it? Running & Manley, Sumterville, Ala.

FOR SALE—Root goods, all new and bright KD. 450 P fences, \$20.00; 200 plain section-holders, $4\frac{1}{4} \times 1\frac{1}{2}$, \$7.00; 200 beeway section-holders, $4\frac{1}{4} \times 1\frac{1}{2}$, \$7.50; 100 Danz. extracting frames, \$3.00; 5 10-frame, 2 8-frame Excelsior and 8 8-frame ventilated covers, 50c each; 2 Junior smokers, 75c each; 2 Parker foundation-fasteners, 30c each; 2 spur imbedders and 10 steel wheel foundation cutters, 15c each; 70 Van Duesen hive clamps, \$1.00. Chauncey E. Kelly, Halcott Center, N. Y.

WANTS AND EXCHANGE

WANTED—From 5 to 25 hives of bees. John M. Saums, Three Bridges, N. J.

WANTED—Two-frame reversible honey-extractor. Leslie Jennings, Valois, N. Y.

ROYAL typewriter. \$65.00. Will trade for honey, queens or offer. E. A. Harris, Albany, Ala.

WANTED—300 used P fences $4\frac{1}{4} \times 4\frac{3}{4}$. Free of disease. Willis N. Zeitler, Philipsburg, Penn.

WANTED—A bee inspector for Fremont County for the season of 1922. Address communications to W. E. Chadwick, Lander, Wyo.

WANTED—To buy 125 colonies of bees in standard hives. State lowest cash prices in first letter. F. L. Stearns, N. Bennington, Vt.

WANTED—Old combs and cappings for rendering on shares. Our steam equipment secures all the wax. Superior Honey Co., Ogden, Utah.

BEE SWAX wanted. Old combs (dry) and cappings for rendering. Also wax accepted in trade. Top market prices offered. A. I. Root Co. of Iowa, Council Bluffs, Iowa.

OLD COMBS, cappings or slungum wanted for rendering by steam press process. We pay cash for wax rendered, trade for supplies, or work it into foundation. W. T. Falconer Mfg. Co., Falconer, N. Y.

WANTED—Bees. State amount you have, condition of bees, hives, kind, prices, etc. All in first letter. Dr. Winnemann's Apiaries Merrill, Wis.

WANTED—200 or less colonies of bees, any style hive, for spring delivery. When quoting price please remember 6c to 8c honey is in sight for next crop. Address A. W. Smith, Birmingham, Mich.

WANTED—Partner with some cash, or manager for an established bee business of about 1200 colonies in three apiaries, well located, convenient and healthy. Reference exchanged. W. B. Gehrels, Puntarenas, Box 27, Costa Rica.

OLD COMBS WANTED—Our steam wax-presses will get every ounce of beeswax out of old combs, cappings or slungum. Send for our terms and our 1922 catalog. We will buy your share of the wax for cash or will work it into foundation for you. Dadant & Son, Hamilton, Illinois.

FOR SALE OR EXCHANGE—Pure Buff Orpingtons or Barred Rocks. One Root eight-frame reversible automatic extractor, International engine, Barnes combination saw. All used two seasons. About 150 hives and supers and frames of drawn combs, quantity of foundation, etc. Dixon, Keewatin, Ont., Can.

REAL ESTATE.

40 ACRES of nice level land in central Wisconsin, \$1200. Will take healthy Italian bees as part payment. T. H. Hansen, 13 No. Franklin St., Janesville, Wis.

FOR SALE OR TRADE—210 acres $5\frac{1}{2}$ miles east of Macon, Miss., in the black belt. An excellent location for bees and Hubam clover. S. A. Chapman, Macon, Miss.

SEEDS AND PLANTS.

"We will not guarantee the purity of any seed advertised nor any nursery stock, as nurserymen ordinarily will not do this themselves; but any seedman or nurseryman advertising in our columns will have given us excellent references in advance, and our readers may consider this fact in their favor."—From Our Guarantee and Advertising Conditions.

HUBAM—100 lbs. prepaid for \$50.00. See our ad on page 263. Blair Bros., R. D. 4, Ames, Iowa.

SORGHUM POP, Burbanks new popcorn. pkg. 15c, 4-oz. pkg. 25c, postpaid. Emil A. Lund, Vin-ning, Minn.

FOR SALE—Annual White Sweet Clover Seed. Quality the best and prices low. See large ad elsewhere in Gleanings. M. C. Berry & Co., Montgomery, Ala., Box 697.

BEEES AND QUEENS.

SEE Thagard's ad elsewhere back to pre-war day prices.

FOR SALE—Italian queens, nuclei and packages. B. F. Kindig, E. Lansing, Mich.

FOR SALE—Italian queens, nuclei and packages. B. F. Kindig, E. Lansing Mich.

HARDY Italian queens, \$1.00 each. W. G. Lauver, Middletown, Pa.

WHEN it's GOLDEN, it's PHELPS. C. W. Phelps & Son, Binghamton, N. Y.

1922 GOLDEN queens, \$1.75 each in May; \$1.50 in June. E. E. Lawrence, Doniphan, Mo.

PINARD'S quality brand queens are the convincing kind. A. J. Pinard, 440 N. 6th St., San Jose, Calif.

FOR package bees and Italian queens, write Jones & Stevenson, Akers, La. Safe arrival and satisfaction guaranteed.

FOR SALE—Carload bees, nuclei, pound packages, full colonies. See our ad elsewhere. The Stover Apiaries, Mayhew, Miss.

PHELPS GOLDEN QUEENS will please you. Mated, \$2.00; 6, \$10.00; or \$18.00 a doz. C. W. Phelps & Son, Binghamton, N. Y.

FOR SALE—75 colonies bees in 10-frame Langstroth hives, now packed with abundant stores. W. C. Ridings, Lawrenceburg, Ind.

FOR SALE—Three swarms of bees, standard hives with supers and supplies—cheap. Davis, 419 Third Ave., Haddon Heights, N. Y.

BUSINESS-FIRST queens offer you their illuminated descriptive handbook with prices, select untested, \$1.50. M. F. Perry, Bradentown, Fla.

QUEENS, day-old and untested. Bees, 2-lb. packages. Thompson safety cages. Resistant Italians. Circular ready. James McKee, Riverside, Calif.

FOR SALE—Package bees and Italian queens. We have been shipping packages and queens for years. Try us! Allenville Apiaries, Allenville, Ala.

FOR SALE—Early package bees, nuclei and queens. We handle 1800 colonies. Shipping season March 1 to June 1. Loveitt Honey Co., Phoenix, Ariz.

PACKAGE bees and nuclei. Booking orders 1922 delivery. See ad elsewhere or write. Canadian orders not solicited. M. L. Nisbet & Bro., Bainbridge, Ga.

PACKAGE BEES—\$1.50 per pound. Untested Italian or Carniolan queens, \$1.25 each. See larger adv. Circular free. J. E. Wing, 155 Schiele Ave., San Jose, Calif.

FOR SALE—Bright Italian queens, 1, \$1.25; 12, \$12.00. Write for prices of nuclei and pound packages. Safe arrival guaranteed. T. J. Talley, Greenville, R. D. No. 3, Ala.

WE ARE booking orders now for spring delivery for the famous "Colorado Queens." Send your order early so as to be sure to get your queens. C. I. Goodridge, Wheatridge, Colo.

FOR SALE—100 colonies of certified Italian bees 8 L. shipping hives. Hives to be returned at my expense. Under state supervision 23 years. Charles Stewart, Johnstown, N. Y.

FOR SALE—15 colonies of Italian bees of 10 frames, wired and combs built from full sheets of foundation. \$10.00 per colony. H. Shaffer, 2860 Harrison Ave., Cincinnati, Ohio

MOTT'S Northern-bred Italian queens. Will have packages of bees to offer in June. Plans "How to Introduce Queens" and "Increase," 25c. E. E. Mott, Glenwood, Mich.

FOR SALE—Three-band Italian queens, select untested \$1.00 each; \$12.00 per doz. 2-lb. package with queen, \$5.00. Satisfaction guaranteed. W. T. Perdue & Sons, Fort Deposit, Ala.

BEES BY THE POUND—Also QUEENS. Booking orders now. FREE circulars giving details. See larger ad elsewhere. Nuances Country Apiaries, Calallen, Texas, E. B. Ault Prop.

IF GOOD bright Italian queens are wanted by return mail, send your order to M. Bates, Greenville, Ala. Price, \$1.00 each; \$10.00 per dozen; \$75 per 100. Pure mating safe arrival and satisfaction guaranteed.

WARNER'S QUALITY QUEENS—Write for illustrated catalog. Elton Warner, R. D. No. 1, Asheville, N. C.

FOR SALE—25 strong colonies of clean bees, \$15.00 each, also entire equipment. S. K. Blundin, Oxford Valley, Pa.

QUEENS—One untested queen, \$1.50; 6, \$7.50; 12, \$14.00; 50, \$55.00; 100, \$100. Tested queens, \$2.50. Wells D. Rose, Sunnyside, Wash.

TRY Pinard. He's the one that breeds for quality. Root's strain. Attractive prices. See larger ad. A. J. Pinard, 440 N. 6th St., San Jose, Calif.

FOR SALE—An apiary at its value. See ad in February. Nuclei after April 20. Strong 4-frame at \$4.00 to \$5.50. B. F. Averill, Howardsville, Va.

FOR SALE—50 colonies of bees at reasonable price, good condition. No disease. Good honey producers. Owner unable to care for them. Duane Shaw, Palestine, Ill.

BOOKED to capacity on early May orders. Heavy discounts on introduced laying-en route-to-you queens with frames, and pounds after May 25: Jes Dalton, Bordelonville, La.

FOR SALE—Three-banded Italian queens, one untested, \$1.25; 12, \$12.00; tested, \$1.75; 12, \$18.00; 2-frame nuclei with untested queen, \$4.50. Jul Buegeler, New Ulm, Texas.

FOR bees, queens nuclei, packages, see larger ad this issue. Annual Hubam sweet clover seed, guaranteed and scarified, delivered for \$1.00 per pound. Curd Walker, Scotts Sta., Ala.

DO IT NOW—Send for descriptive booklet, prices and testimonials of my improved strain of Italian queens. Pure mating and safe arrival guaranteed. Write J. B. Hollopeter, Rockton, Pa.

FOR SALE—A few good strong colonies of Italian bees in May, in 10-frame hive-bodies. All queens clipped and one year old in August. A. W. Lindsay, 438 Mt. Vernon Ave., Detroit, Mich.

FOR SALE—Golden Italian queens ready May 1, 1 queen, \$1.25; 6, \$6.50; 12, \$12.00; 100, \$85.00. Virgins, 50c each. Write for prices of nuclei. W. W. Talley, Greenville, R. D. No. 4, Ala.

FOR SALE—Three-banded Italian queens, 1, \$1.00; 6, \$5.00; 12, \$9.00; 100, \$70.00, after May 20. We ship only the best. Safe arrival and satisfaction guaranteed. W. C. Smith & Co., Calhoun, Ala.

FOR SALE—Golden Italian queens, untested about May 1, \$1.15; 6 for \$6.50; 12 or more \$1.00 each; tested \$2.00; select tested, \$3.00. No disease. No bees for sale. D. T. Gaster, Randleman, R. D. No. 2, N. C.

FOR SALE—2-pound packages, 3-banded Italian bees, with queens, \$4.75 each; 10 or more, \$4.50 each; 25 or more, \$4.25 each. No disease, safe arrival and perfect satisfaction guaranteed. J. J. Scott, Crowville, La.

FOR SALE—50 hives of bees in 2-story 10-frame hives; zinc queen-excluders, escape-boards, Miller feeders, comb-honey supers, extra combs wired. Other tools and fixtures for bees. E. D. Howell, New Hampton, N. Y.

FOR SALE—Our well-known strain of pure Italian bees and queens. They are great honey gatherers and wonderful disease-resisters. Send for free circular and price list. M. C. Berry & Co., Montgomery, Ala., Box 697.

FOR SALE—Italian bees, free from disease, in nine or ten Hoffman frame hives, delivered on board the cars at Dayton, Pa., in good order. Good colonies. \$15.00 cash with order. Inquire of Jacob Long, Sr., Dayton, R. D. No. 1, Pa.

FOR SALE—Unsurpassed Italian queens, ready June 1. Untested, 1, \$1.25; 6, 7.00; 12, \$12.00; 50, \$50.00; 100, \$85.00. Tested, 1, \$2.00; 6, \$11.00. My queens are actually laying before they are sent out. J. D. Harrah, Freewater, Oregon.

WRITE us number of packages or nuclei you may be in need of. We will be glad to give you our best prices, also amount of express. We believe we are so located that we can make you a substantial saving. R. V. Stearns, Brady, Texas.

FOR SALE—12 colonies, leather-colored Italians, with young tested queens, in ten-frame Langstroth hives. No disease in this part of the country. Ready to ship May 1. Price \$12 each, or \$140 for lot. Van Collins, R. F. D. Port Chester, N. Y.

ORDERS booked now for spring delivery, 3-frame nucleus and queen, \$6.50; select tested, \$7.50; Dr. Miller's strain. No pound packages. Low express rates and quick transit north. 10% with order. S. G. Crocker, Jr., Roland Park, Baltimore, Md.

BEEES BY THE POUND—I am prepared to furnish for April or May deliveries Italian bees in one, two or three pound packages. Shipped in Root-Pritchard or Root combless shipping cages. Correspondence solicited. G. O. Pharr, New Iberia, La.

BRIGHT ITALIAN QUEENS, \$1.00 each, 10% less in dozen lots. Pure mating, safe arrival and reasonable satisfaction guaranteed in U. S. and Canada. Write us for prices on package bees. We have them in season. Graydon Bros., Rt. 4, Greenville, Ala.

WILLOW-DELL queens and bees have pleased. Will again be ready to handle your orders. May delivery with queen, two-frame nuclei, \$4.00; three-frame, \$5.25; Jumbo, \$4.75 and \$6.00. Shipping boxes returned collect. H. S. Ostrander, Melleville, N. Y.

EXPRESS is lower on northern bees. Prices no higher. 2 lbs. Italian bees with queen on comb of stores in May, \$5.75. Comb of stores insures success. Prompt delivery and safe arrival guaranteed. Card brings circular of golden and 3-banded queens. Ross B. Scott, LaGrange, Ind.

MY GOLDEN ITALIAN QUEENS possess the qualities which make beekeeping profitable. Mated, \$1.00 each. \$10.00 per doz. Virgins, 50c each or \$4.25 per doz. Safe arrival and satisfaction guaranteed. Your orders solicited. Crenshaw County Apiary (Melvin Talley, Prop.), Rutledge, Ala.

THREE-BANDED ITALIAN QUEENS. Bred from queens whose bees have given big crops of honey. Pure mating and satisfaction guaranteed. May 15 to June 15, 1, \$1.50; 6, \$7.50; 12, \$13.50. All orders filled in rotation. First on list will be first filled. J. D. Kroha, 87 North St., Danbury, Conn.

MERRILL'S three-band and Golden Italian queens, the disease-resisting honey-gathering strain. Large, vigorous, beautiful and gentle. High-grade stock at reduced prices, \$1.00 each; 6 \$5.25; 12, \$10.00; 25, \$18.50. Satisfaction guaranteed. G. H. Merrill, R. D. No. 5, Greenville, S. Car.

FULL COLONIES, 2-FRAME NUCLEI, PACKAGE BEES and ITALIAN QUEENS from the apiaries of E. R. King, formerly Deputy Inspector of Ohio, later in charge of Apiculture at Cornell University. Write us what you want. Prices and information will be sent you. King's Apiaries McArthur, Ohio.

FOR SALE—Comb packages, 3 lbs. bees, one good untested queen on a standard frame of honey and emerging brood, \$6.50; 2 lbs. same as above, \$5.00. 15% down to book order. To be shipped April 20 to June 1. Queens introduced if wanted subject to be laying en route. Guarantee safe delivery. C. A. Mayeux, Hamburg, La.

COLORADO HEADQUARTERS for QUEENS—Northern-bred leather-colored three-band Italians. Safe arrival guaranteed. Booking orders now for June 1st delivery. Send for circular and price list. Loveland Honey & Mercantile Co., Loveland, Colo.

MY 1922 queens and bees for sale, the big yellow kind, none better. Satisfaction guaranteed or money back. Price, untested, \$1.00 each; \$10.00 per doz., or \$80.00 per 100. Tested, \$1.75, E. F. Day, Honoraville, Ala.

THREE pounds of bees, shipped on a Hoffman frame of brood and honey, with an untested Italian queen for \$6.00. No disease, satisfaction and safe arrival guaranteed. 25% books your order for April and May shipments. E. J. Beridon, Jr., Mansura, La.

FOR SALE—Three-banded leather-colored bees and queens—big cut in prices. No disease. Safe arrival and satisfaction guaranteed. Shipping season April 15 to May 25. Send for circular and prices on quantities. J. M. Cutts & Son, R. D. No. 1, Montgomery, Ala.

THE ITALIAN QUEENS OF WINDMERE are superior three-banded stock. Our aim is not quantity but quality. Our first consideration is to give perfect satisfaction. Untested, \$1.50 each; 6 for \$8.00; tested, \$2.00 each; select tested, \$3.00 each. Prof. W. A. Matheny, Ohio University, Athens, Ohio.

FOR SALE—Golden Italian queens and bees, untested, 1 queen \$1.00; 1 doz., \$10.00; 100, \$75.00. 2-lb. package, with queen, \$5.00; 1-lb. package with queen, \$3.00; 12 or more, 5% off. 2-frame nucleus with queen, \$5.00; 15 or more, 5% off. Safe arrival and satisfaction guaranteed. J. F. Rogers, Greenville, R. D. No. 3, Ala.

I EXPECT to be ready to start shipping 3-lb. packages of bees with 1 frame, 1 untested queen at \$6.00; 2-frame nuclei with untested queen, \$4.50, about April 15. Young tested queen, 50c extra, or \$1.50 each. I think I was the second to ship packages of bees from this state and know how to serve customers. F. M. Morgan, Hamburg, La.

FOR SALE—Package bees for spring delivery. three-banded strain, bred for business, 20% cash books your order. Safe arrival and satisfaction guaranteed. A two-pound package of bees, and select untested queen for \$5.00; 25 or more for \$4.75 each. Write for prices on larger lots. Caney Valley Apiaries, J. D. Yancey, Mgr., Bay City, Texas.

FOR SALE—200 colonies of the celebrated Moore strain of leather-colored Italians. They are in Langstroth hives, combs all built on wired foundation. All have tested queens less than one year old. No disease among or near them. Price in lots of one to 50, \$12.00 each; 50 to 100, \$11.50 each; 100 or more, \$11.00 per colony. Elmer Hutchinson & Son, Lake City, Mich.

LARGE, HARDY, PROLIFIC QUEENS—Three-band Italians and Goldens. Pure mating and safe arrival guaranteed. We ship only queens that are top notchers in size, prolificness and color. After June 1 prices as follows: Untested, \$1.25 each; 6 for \$7.00; select untested, \$1.50 each; 6 for \$8.50; select tested, \$3.00 each. Special prices on larger quantities. Queens clipped free on request. Health certificate with each shipment. Buckeye Queens, Zoarville, Ohio.

GOOD queens advertise themselves. It takes expensive advertising to sell poor queens, and if you don't believe it try it. We believed in former years we had the best three-banded queens obtainable. We still believe it. Our customers also tell us the same. Try a few. We have dropped the price in reach of all this year. We will have a few virgins for 50c when we have a surplus of them. We can furnish either from imported or Americanized mothers. Untested, \$1.00; selected, \$1.25; tested, \$2.00; selected, \$2.50. F. M. Russell, Roxbury, Ohio.

TRY ACHORD'S BEES and QUEENS. Price list by return mail. W. D. Achord, Fitzpatrick, Ala.

FOR SALE—Italian queens nuclei and packages. B. F. Kindig, E. Lansing, Mich.

FOR SALE—Hardy Italian queens. Prices on request. The Brookside Apiaries, Bennington, Neb.

BOOKING orders now for early queens and package bees. Write for prices. Sarasota Bee Co., Sarasota, Fla.

FOR SALE—20 colonies Italian bees in standard 10-frame hives. Also Cowan extractor; 30 supers. Bargain. A. L. Rumsey, 105 Catherine St., Ithaca, N. Y.

FOR SALE—1 to 25 colonies of Italian bees in 10-frame hives, each \$10.00; 35 10-frame L. extracting supers, each \$1.50; 18 10-frame Danz. comb-honey supers, each 75¢; one 2-frame Novice extractor, \$12.00; 30 cases, two each, second-hand 60-lb. cans, each 40¢. Have no disease. C. Kubick 7032 Alcott Ave., Edison Park, Chicago, Ill. Telephone, Newcastle 1531.

PHELPS' GOLDEN ITALIAN QUEENS combine the qualities you want. They are GREAT HONEY-GATHERERS, BEAUTIFUL and GENTLE. Virgins, \$1.00; mated, \$2.00; 6 for \$10.00, or \$18.00 per doz.; tested, \$5.00. Breeders, \$10.00 to \$20. Safe arrival guaranteed only in the U. S. and Canada. C. W. Phelps & Son, Binghamton, N. Y.

LARGE leather-colored three-banded Italian queens. 10-year selection, bred for honey-gathering, gentle, hardy and long life. Price, select untested, 1, \$1.25; 6, \$6.50; 12, \$12. After July 1, \$1.00; 6, \$5.00. Tested, \$1.50 each. Write for price on large orders. Free booklet, "How to Transfer, Get Honey and Increase." J. M. Gingerich, Kalona, Iowa.

PACKAGE BEES—With untested 3-banded Italian queen, 21 years of experience enables me to breed queens that get results. 2-lb. package, \$4.25; 3-lb. package, \$5.50. Deduct 50¢ each for hybrid bees. No disease in county. Bees shipped by express in May, 25% with order and balance before shipment. Safe arrival guaranteed. Bruce Anderson, Bath, N. C.

FOR MAY DELIVERY—One vigorous Italian queen, one frame emerging brood, one pound bees, price complete, \$5.00. Additional pound bees, \$1.00. Additional frame of brood, \$1.00. Banat mixed queens and bees 5% discount. After May 25 10% discount on all. Safe arrival guaranteed. Send 10¢ to book order. T. W. Livingston, Norman Park, Ga.

BURLESON ITALIAN BEES AND QUEENS—In 2 and 3 lb. packages; 1 2-lb. package with select untested queen, \$5.00; 25 or more, \$4.50; 1 3-lb. package with select untested Italian queen, \$6.25; 25 or more, \$5.75. Ten per cent with order, balance 10 days before shipment; 1000 colonies to draw from. Can deliver the goods on time. Safe arrival and satisfaction guaranteed. T. W. Burleson, Waxahachie, Texas.

CONNECTICUT queens. Highest grade 3-banded Italians ready June 1. Select untested \$1.25 each; 6, \$6.50; 12, \$12.00; 50 \$47.50; 100, \$90. Two lbs. bees with queen, \$5.00; 3 lbs. with queen, \$7.00. Two-frame nuclei with queen, \$5.50; 3-frame with queen, \$7.50. Select virgin queens (not culls), 50¢ each, \$45.00 per 100. No disease and satisfaction guaranteed. A. E. Crandall, Berlin, Conn.

MAY delivery, one, two and three pound packages, \$3.00, \$4.00 and \$5.00. Nuclei, \$3.00, \$4.25 and \$5.50, with select untested Italian queens. Special orders solicited. Select untested three-band queens, April and May, \$1.25, 6 or more \$1.00 each. 20% boks order. State health certificate. Safe arrival and satisfaction guaranteed. Address Apalachicola, Fla., office, Tupelo Honey Co., Columbia, Ala.

LAST fall I had selected and tested six queens. Will use them as breeders this season in my queen yard. Their surplus honey capacity is from 216 lbs. to 288 lbs. each. I guarantee that every queen bought of me in 1922 is to be the daughter of one of these queens. Bees are three-banded. Mated, in June, \$1.25 each; 6, \$7.00; 12, \$13.50; 25 or more, \$1.00 each. After July 1, \$1.00 each straight. Julius Victor, Martinsville, N. Y.

FOR SALE—100% queens bred from extra-select Jay Smith breeder. Larger queens from my cell builders reinforced with hatching brood and mated in standard frame nuclei. I guarantee safe arrival and entire satisfaction and that every queen lays before being caged. Also package bees. I am after a name and reputation. Give me a trial. Select untested, 1 \$1.25; 6, \$7.00; 12, \$13.00; 25 to 100, \$1.00 each. H. Peterman, R. F. D., Lathrop, Calif.

BEES—2-lb. packages, \$3.50; 6 or more, \$3.45; 12 or more, \$3.40; 25 or more, \$3.25; young Italian queens, \$1.25 extra. Shipments April 10 to May 1, by express f. o. b. New Orleans. Hardy three-banded and leather-colored stock, free from disease, shipped in Root cages on frame of foundation, safe arrival and satisfaction guaranteed or money refunded, 25% deposit to book your order. Order early and state date you prefer shipment. Reference A. I. Root Co., New Orleans, La. R. S. Knight, 4927 Conti St., New Orleans, La.

THAT PRITCHARD QUEENS AND PRITCHARD SERVICE made a hit last season is proven by the many letters of appreciation and repeated orders received. This year we are BETTER PREPARED WITH A LARGER OUTFIT AND REDUCED PRICE. Three-banded Italians, untested, \$1.25 each, 6 for \$7.00; select untested, \$1.50 each, 6 for \$8.50; select tested, \$3.00 each. Queens clipped free on request. We are booking orders now. Send yours at once and we will do our best to ship on date you desire. Acknowledgement and directions for introducing sent on receipt of order. Safe arrival and satisfaction guaranteed. Untested ready about June 1. Arlie Pritchard, R. D. No. 3, Medina, Ohio.

LATHAM'S queens are well-bred Italians. She-Suits-Me Queens will please you. Get in your order early. The discount of 20% will continue till May 1, and will then be positively removed for the season. Prices for untested queens from May 15 to June 15, \$2.00 each, 10 or more, \$1.75 each. After June 15, \$1.50 each for 1 to 9; \$1.30 each for 10 to 24; \$1.25 each for 25 to 49; \$1.20 each for 50 to 99; \$1.15 for 100 queens. See full page advertisement on inner back cover of January Gleanings. That discount makes my prices low. I offer the discount so that I can know in advance the number of queens that I am to have ready each month. When a queen-breeder knows in advance, he can afford to give better prices, since that knowledge permits him to produce his queens at less cost. Allen Latham, Norwichtown, Conn.

QUEENS AND PACKAGE BEES—March 1 finds us ready for shipping. Let us book you for short notice shipping. Bees and queens for your unpacking time. We have just added 1200 colonies of bees to our business in Mesa, Ariz., with our Mr. Jas. Lisonbee where weather and spring conditions are ideal for March and April package bees. All queens will be shipped from our large queen yards at Sandia, Texas, where we breed our pedigreed strain of three-band leather-colored queens from tested honey-producing mothers, and 8 miles out we breed our special golden queens that produce bees solid yellow to the tip. Very gentle, prolific and good honey-getters. 1 untested queen, \$1.50; 25 or more, \$1.25 each; 1 select untested queen, \$1.70; 25 or more, \$1.40 each; 1 select tested queen, \$3.00; tested breeder, \$5.00. 1-lb. package bees, \$2.25; 25 or more, \$2.15; 1 2-lb. package bees, \$3.75; 50 to 100, \$2.60 each. Larger size quoted on request, also parcel post packages. Safe arrival guaranteed. Send all orders to Dr. White Bee Company, Sandia, Texas.

BY RETURN MAIL—Tested queens, \$2.50 each, reared last fall from our well-known strain of three-banded Italians. None better. Untested queens ready to mail April 15, \$1.50; \$13.50 per dozen. Safe arrival and satisfaction guaranteed. Also no disease ever in this locality. J. W. K. Shaw & Co., Loreauville, La., Iberia Parish.

FOR SALE—Two-frame nuclei Italian bees, with tested Italian queen, delivery May 1 by express f. o. b. here, \$7.50 each. Terms, \$2.00 down, balance ten days before shipping date. These queens were reared last August from very choice Italian stock, and big producers. Order early as we have set a limit on number of nuclei we will sell this season. First come, first served. Largest apiary in Westchester County, Spahn Bros., Pleasantville, Westchester Co., N. Y.

QUEENS—Bright, three-banded Italian. We are now booking orders for the season of 1922. Shipments of queens this year commenced on March 15. All queens mated in standard full-sized nuclei. We operate four thousand standard full-sized nuclei. Capacity and output this season five thousand queens per month. We own, operate and run for extracted honey in the states of California and Nevada twelve thousand colonies of bees. All of our breeders are selected queens whose colonies led these twelve thousand colonies of bees last season. Better selection of breeders cannot be equalled or had anywhere. We have the capacity and output of queens to make shipments promptly as and when promised. We guarantee safe arrival of queens. Prices—Mated, untested queens, 1. \$1.00; 6. \$5.50; 12. \$9.60. In larger quantity 75c each. In quantity of 100 or more write for special price. Terms 10 per cent deposit on booking order—balance at time of shipment. See our large advertisement in this magazine. Western Bee Farms Corporation (Principal); Western Honey Corporation and Western Citrus Honey Corporation (Associated Corporations). Claus Spreckels Building, No. 703 Market Street, San Francisco, California.

PACKAGE BEES—While publishing the Beekeepers' Review I sold thousands of packages of bees for others and I do not think I ever offered a better bargain on bees than I can offer on 200 4-lb. packages from Georgia. They are really a one-frame nucleus containing 4 lbs. of bees, the comb containing the feed for the bees while in transit. There is really no loss in shipping bees this way, as I know from long experience in shipping hundreds of packages. The queens are tested three-banded stock less than a year old, except a few mismatched ones which will be replaced by young ones reared this spring. There has never been disease in this location. Safe delivery by express guaranteed. Delivery to be made between April 20 and May 10. The regular price of package bees seems to be \$2.00 per pound and tested queens, \$2.00 each, which would make one package at market price cost \$10.00. I quote 10 4-lb. packages of bees with tested queens at \$60.00; 50 packages at \$287.50; 100 packages, \$550.00. Large purchasers had better wire in their order as they will not last long at this low price. Write or wire me here at my winter home. Address E. D. Townsend, Marksville, La.

HELP WANTED.

WANTED—Man to help with 150 colonies of bees, poultry and gardening at Madison, N. J. Give experience. L. W. Smith, 56 Williams St., New York City.

WANTED—Young man with general experience for the coming bee season. State qualifications in first letter. Room and board furnished. B. B. Cogshall Groton, R. D. No. 12, N. Y.

WANTED—A man to work in our apiaries. Must have some experience. Send reference, etc., in first letter. J. B. and Chas. Merwin, Prattsville, N. Y.

WANTED—Energetic young man to work in our queen yards. Must have good eyesight and be willing to hustle. In applying give full details and name salary demanded in first letter. M. C. Berry & Co., Montgomery, Box 697, Ala.

WANTED—Four men for the coming season experienced in comb-honey production, to work in our apiaries in Montana. Give references, experience and wages expected in first letter. Steady work for right man. Weber Bros. Honey Co., Blackfoot, Idaho.

WANTED—By a large and financially responsible corporation, operating at several different points in the states of California and Nevada, several experienced bee men and several helpers. Good wages (board and room) and permanent position, twelve months a year if work is satisfactory. Financial references furnished if desired. Give age, experience, and full particulars in first letter. Apply Western Bee Farms Corporation, 703 Market St., San Francisco, Calif.

SITUATIONS WANTED

POSITION WANTED—With progressive beekeeper to learn the business. Ohio or Michigan preferred. C. A. Henry, Medina, Ohio.

WANTED—A position with some good man or widow woman to oversee or take charge of bees. Have had large experience. Raised on farm. J. W. Newton, 1235 Abbott St., Detroit, Mich.

MISCELLANEOUS.

FOR SALE—A 6-inch telescope, surveyor's compass, little used, very accurate. O. Bromfield, South Jacksonville, Box 312, Rt. 8, Fla.

TYPEWRITERS—All makes slightly used; \$20 up. Easy payments. Free trial. Express prepaid. Guaranteed two years. Payne Company, Rosedale, Kansas.

FOR SALE—Pure young Nubian buck, also 25 half and three-quarter young Nubian does and doe kids from good milking mothers. R. M. Collins, 220 No. 4th St., Muskogee, Okla.

MEDICINAL roots and herbs are very profitable to grow. We especially recommend growing Golden Seal, which with good care will yield as high as \$10,000 per acre for each crop. It takes several years to mature but will average \$1000 a year. Special Crops, a monthly paper, tells how. Sample copy, 10c, \$1.00 per year. Address Special Crops Pub. Co., Box "G," Skaneateles, N. Y.



IMPORTED MOWING BLADES

And Sickles with DANGEL cutting edge "THE MARUGG SPECIAL" are praised by thousands of users in the United States. Used by leading apiarists. Write for particulars to THE MARUGG COMPANY, Dept. B, TRACY CITY, TENN.

Newman's Queens

ORIGINATED FROM THE WORLD-FAMOUS MOORE STRAIN OF ITALIANS. ABSOLUTELY FIRST QUALITY AND FULLY GUARANTEED. NO DISEASE. SATISFACTION AND SAFE ARRIVAL.

Untested \$1.25; 6, \$7.00; 12, \$13.50.
Select Untested, \$1.75; 6, \$9.00; 12, \$17.00.

Circular free.

A. H. NEWMAN, QUEEN-BREEDER.
MORGAN, KY.

WRITE US

number of packages or nuclei you may be in need of. We will be glad to give you our best prices, also amount of express. We believe we are so located that we can make you a substantial saving.

R. V. STEARNS
BRADY, TEXAS

QUEENS

OUR OLD RELIABLE THREE-BANDED ITALIANS ARE HONEY GETTERS.

They are gentle, prolific, and very resistant to foul brood. Orders booked for one-fourth cash. Safe arrival guaranteed. Circular free.

PRICES APRIL 1st TO JULY 1st.
Untested\$1.25; over 25, \$1.00 each
Sel. Unt. 1.50; over 25, 1.25 each
Tested 2.50; over 25, 2.25 each
Selected Tested 3.00 each

See our Dec. and Jan. Advertisement.

JOHN G. MILLER

723 C Street, Corpus Christi, Texas.

Ready now, 3-banded Italian queens, the famous Dr. Miller and my own stock. Prices: Untested, \$1.25 each, 6 for \$7.00, 12 for \$13. Selects, 25c each higher; clipping free. Tested, \$2.00 each, 6 for \$11, 12 for \$20. Write for prices on larger lots. 3-frame nucleus with untested queen, \$5.50; without queen, \$4.25. Bees, one pound \$2.00; two pounds, \$3.75; three pounds, \$5.25. (Add price of queens to same.)

As I have just got located in my new location I am not booked very heavy with orders; so, if you want bees and queens from the south early, give me a list of what you want booked, and date of shipment. A square deal to all my customers, new as well as old. 20 years' experience with the bees, 10 years rearing and shipping bees; give me a chance. I will surely try to treat you squarely.

CURD WALKER,
(Formerly of Jellico, Tenn.) Scotts Station, Ala.

INDIANOLA APIARY

is now booking orders for 1922 for Italian bees and queens. Write for price list and circular. No disease. Bees inspected by State inspector.

J. W. SHERMAN
Valdosta, Ga.

ROOT QUALITY BEES AND BEEKEEPERS' SUPPLIES.

Bees in the hive, in packages, and nuclei, three-banded leather-colored Italian queens. Let a beekeeper of long standing serve you in your requirements for 1922. Catalog on request.

O. G. RAWSON,
3208 Forest Place, East St. Louis, Illinois.

Queens of Quality

—from—
Tennessee

3-band Italians only.

Untested, \$1.25 each; six for \$7.00;
\$12.00 per dozen. Ready about May
10th Circular free.

J. I. BANKS, DOWELLTOWN, TENN.

NO CASH WITH ORDER

Progress Trees and Shrubs are so trustworthy that you pay after you get them. Quality that counts and a service that helps. Write for catalog without delay.

PROGRESS NURSERIES,
1317 Peters Avenue. TROY, OHIO.

12 Months to Pay

You can easily earn money for the small payments. Parents often advance first payment to help buy a RANGER. 44 styles, colors and sizes. Factory to Rider prices. Delivered FREE, express prepaid, for 30 DAYS TRIAL. Terms to suit—cash or easy payments.

Tires, lamps, wheels, horns, repairs and equipment at half usual prices. SEND NO MONEY. Write today for our big, Free Ranger Catalog and marvelous prices.

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KELLOGG'S Great Crops of STRAWBERRIES and How to Grow Them THE KELLOGG WAY

The most practical book on strawberry growing ever published. 68 pages of money-making information and art—34 pages in natural color. Written by America's most successful strawberry grower. Tells how he makes poor soil rich without manure or fertilizer. Gives his secrets for growing the big crops of fancy strawberries that won him fame and fortune. Send for this book right now and learn the KELLOGG WAY. A postal will do. It's FREE.



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HUBAM CLOVER

Grown in Wisconsin

Seed planted on April 23, blossomed June 28, in blossom up until Sept. 15. When it was cut for seed and the stubs shot out a second growth, it blossomed until heavy frost. Seed for sale at \$1.75 a pound to beekeepers. Germination and purity guaranteed. Above price is for single pounds. Bushel lots at special prices upon application.

OAK WOODS FARM

W. P. BRENNER, Prop.

Green Bay, Wisconsin

HUBAM CLOVER

The Honeybees' Friend

Beekeepers are greatly interested in Hubam Clover because it produces the largest crop of splendid honey food.

We have a select lot of certified hardy Hubam Clover seed. 25c an oz.; \$2.50 a lb.; when orders are placed for ten lbs. or more, \$2.00 per lb. Order early. Supply limited.

KEITH BROS. NURSERY, Box 716. Sawyer, Mich.

HUBAM

50 CENTS A POUND

We have a few hundred pounds of Hubam Clover seed left and are offering it at 50c a pound f. o. b. Ames, for orders of ten pounds or more; 75c a pound for smaller amounts, prepaid.

This is Genuine Hubam of good quality, and has been hulled and scarified at the Iowa State College, here at Ames.

Several leading beemen have said it would pay beekeepers to give seed away to get it started in their neighborhood. Better order 100 pounds and be sure of a big crop of honey next summer.

On orders of 100 pounds or more we will pay the express.

BLAIR BROTHERS

Route 4.

AMES, IOWA



BARKER
WEEDER, MULCHER
AND CULTIVATOR

**BETTER GARDENS
EASY TO KILL WEEDS
AND MULCH THE SOIL**

Don't do garden work the slow, back breaking way. The BARKER makes the finest gardens possible—quickly, easily. Simply push along rows (like lawn mower)—8 blades revolving against underground knife destroy the weeds and in same operation break the crust into a level, porous, moisture-retaining mulch. Aerate soil. "Best Weed Killer ever used." Has leaf guards, also shovels for deeper cultivation. A boy can run it—do more and better work than 10 men with hoes.

Write for **FREE BOOK**

Illustrated book, postpaid, gives prices delivered to your station, contains valuable information on gardens, letters from users, etc. A card brings it. Write today.

BARKER MFG. CO.

Box 23

DAVID CITY, NEB.



World's Best Roofing at Factory Prices

"Reo" Cluster Metal Shingles, V-Crimp, Corrugated, Standing Seam, Painted or Galvanized Roofings, Sidings, Wallboard, Paints, etc., direct to you at Rock-Bottom Factory Prices. Positively greatest offer ever made.

Edwards "Reo" Metal Shingles

cost less; outlast three ordinary roofs. No painting or repairs. Guaranteed rot, fire, rust, lightning proof.

Free Roofing Book

Get our wonderfully low prices and free samples. We sell direct to you and save you all in-between dealer's profits. Ask for Book No. 183



LOW PRICED GARAGES

Lowest prices on Ready-Made Fire-Proof Steel Garages. Set up any place. Send postal for Garage Book, showing styles. THE EDWARDS MFG. CO., 433-483 Pike St., Cincinnati, O.

FREE
Samples &
Roofing Book

A-T-T-E-N-T-I-O-N!

OHIO AND WEST VIRGINIA BEEKEEPERS.

We are most favorably located for serving Central, Southern and Eastern Ohio, and also West Virginia. No matter where you are, full stocks, best shipping facilities and prompt attention will insure satisfaction. Free catalog.

MOORE & PEIRCE

Zanesville, Ohio—"Beedom's Capital."

MASON BEE SUPPLY COMPANY MECHANIC FALLS, MAINE

From 1897 to 1922 the Northeastern Branch of
The A. I. Root Company

PROMPT AND EFFICIENT SERVICE

BECAUSE—Only Root's Goods are sold.

It is a business with us—not a side line.

Eight mails daily—Two lines of railway.

If you have not received 1922 catalog send name at once.

HUBAM 200 Bushels Distributed FREE YOUR Opportunity.

Grow this wonderful clover. Plant field at our expense. Seed produced where plant originated, under direct supervision of H. D. Hughes. 20c for large packet of seed, full information regarding our offer, and the book "Hubam Clover, What, Where, Why?" Wonderful reports from growers in your section and other information sent FREE. Lowest prices. Transportation paid. None better. Alabama Hubam Clover Ass'n, Inc., Box 625, Newbern, Ala.

"Best" Hand Lantern



A powerful portable lamp, giving a 300 candle power pure white light. Just what the farmer, dairyman, stockman, etc. needs. Safe—Reliable—Economical—Absolutely Rain, Storm and Bug proof. Burns either gasoline or kerosene. Light in weight. Agents wanted. Big Profits. Write for Catalog. **THE BEST LIGHT CO.**

306 E. 5th St., Canton, O.

PATENTS --- TRADEMARKS

I offer prompt, personal and expert professional service. 10 years' experience. Write for terms. **LESTER SARGENT**, Patent Attorney, 524 Tenth St., N. W., Washington, D. C.

PATENTS

Practice in Patent Office and Court.
Pat. Counsel of The A. I. Root Co.
CHAS. J. WILLIAMSON,
McLachlan Bldg., Washington, D. C.

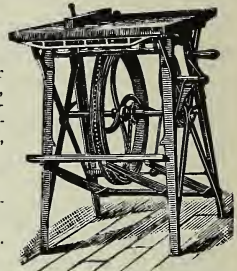
BARNES' HAND & FOOT POWER MACHINERY

This cut represents our combined circular saw, which is made for beekeepers' use in the construction of their hives, sections, etc.

Machines on Trial

Send for illustrated catalog and prices.

W. F. & JOHN BARNES CO.
645 Ruby Street
ROCKFORD, ILLINOI



Three-banded Italians for May Shipments.

	1	12	100
Untested Queens	\$1.00	\$11.00	\$75.00
Select Untested	1.25	13.00	100.00
Tested Queens	1.35	15.00	125.00
Breeders			\$5.00 each

Safe arrival and satisfaction guaranteed.

H. L. MURRY, SOSO, MISS.

Big Fence Sale

If you
need fence let us send
you our 100 page Catalog. **PRICES 'WAY
DOWN** on Farm, Poultry and Yard Fence
Posts and Gates. We've saved thousands
of farmers from \$10 to \$50 each. We
can help you. Write today. **IT'S FREE.**
KITSELMAN BROS. Box 21 Muncie, Ind.

450,000 TREES

200 varieties. Also Grapes, Small Fruits, etc. Best rooted stock. Genuine. Cheap. 2 sample currants mailed for 20c. Descriptive price list free. **LEWIS ROESCH**, Box C, Fredonia, N.Y.

QUEENS NUCLEI AND PACKAGE BEES

Three-Band Italians Only. Select Breeding. None Better Regardless of Price

Again the busy season is with you amid the humming bees. We have been at it some time, preparing our colonies for their individual tasks, for each one has its special duty to perform and must be in the pink of condition, that there shall be no disappointments.

Seeing each hive had a sufficient number of bees or uniting any that were not up to required strength, that every one had a normal laying queen, and ample stores to carry on brood-rearing without intermission, plenty of good brood-combs in which to rear the thousands of gauze-winged workers (that soon will be scattered over this continent to help harvest the crop of treasured sweet) has kept us on the jump.

We are prepared. Now in summing up your winter losses, or if early increase be desired, perhaps you have some empty hives standing 'round that had better be earning something—you would do well to send us a list of your Bee and Queen wants. That's our line.

Terms—20% to book. Shipment to start April 15, after which date we can make shipment within 5 days after your order is received or guarantee to return same at once. Send full amount before shipment is desired. Bees by express F. O. B. here.

We guarantee: Freedom from disease, safe arrival and complete satisfaction. Ask for our free folder.

PRICES—Untested Queens, \$1.10 each; over 25, \$1.00 each. Select Untested, \$1.35 each; over 25, \$1.25 each. Tested, \$2.00. Select Tested, \$3.00 each. Breeders, \$7.50 and \$10.00 each in one-frame nucleus. **NUCLEI**—2-frame with young laying queen, \$5.50 each; over 10, \$5.00 each. 3-frame with young laying queen, \$7.25 each; over 10, \$6.75 each. **COMBLESS PACKAGES**—One lb., \$2.75 each; over 10, \$2.50 each. Two lbs., \$4.25 each; over 10, \$4.00 each. Three lbs., \$6.00 each; over 10, \$5.75 each. Queens extra.

JENSEN'S APIARIES, ROUTE 3, CRAWFORD, MISS.



A card will bring
our 1922 catalog.

QUEENS

While gentleness and color are not lost sight of in breeding our queens, still the honey-getting quality of the bees is the most desirable feature. By selecting for prolificness and vigor, we have produced a strain that are splendid honey-getters.

Mr. W. A. Chrysler of Chatham, Ontario, one of the big fellows up there, writes: "The queen I got from you in 1920 and a queen I raised from her, produced a little over four hundred pounds of honey each. There was not five pounds difference in them. They outdistanced any of the rest of our three hundred colonies by about 75 pounds."

QUEEN PRICES.

Before August First	After August First
1 to 4 inclusive.....\$2.50 each	1 to 4 inclusive.....\$2.00 each
5 to 9 inclusive..... 2.45 each	5 to 9 inclusive..... 1.95 each
10 or more..... 2.40 each	10 or more..... 1.90 each

Breeding Queens for the season, \$10.00 each.

We still have a number of breeders that are not sold that can be delivered any time after April 1. We believe these are as good breeders as we have ever sold.

JAY SMITH, ROUTE 3, VINCENNES, IND.

BEES QUEENS FROM GEORGIA

QUEENS—Untested, \$1.00. Tested, \$1.50. BEES—1 pound, \$2.00; 2 pounds, \$4.00; 3 pounds, \$6.00. NUCLEI—1-frame, \$3.00; 2-frame, \$4.00; 3-frame, \$6.00. Discounts on quantity orders. Your satisfaction guaranteed. Send us your list of supply needs.

MICHIGAN HONEY PRODUCERS EXCHANGE, Inc.
5495 Grand River Ave., Detroit, Michigan

IN OKLAHOMA

and northern Texas, we can furnish Beekeepers Root "QUALITY" goods at factory prices, with very quick service and low freight charges. Try us. We think you will like us.

THE STILES BEE SUPPLY CO.
STILLWATER, OKLA.

BEES—ITALIAN BEES—BEES

Full colonies with Italian queen at \$15; 2 for \$25. 3-frame nucleus with Italian queen at \$6.50. 3-lb. package with Italian queen at \$6.50. No disease. Safe arrival and satisfaction guaranteed.

VAN'S HONEY FARMS

Van Wyngarden Bros., Props. Hebron, Indiana.

NEW ENGLAND

Beekeepers will find a complete line of the best supplies here. Send in your order early and be ready for the harvest. Remember this is the shipping center of New England. Write for new catalog.

H. H. JEPSON

182 Friend Street.

BOSTON 14, MASS.



The "BEST" LIGHT

Positively the cheapest and strongest light on earth. Used in every country on the globe. Makes and burns its own gas. Casts no shadows. Clean and odorless. Absolutely safe. Over 200 styles. 100 to 2000 Candle Power. Fully Guaranteed. Write for catalog. AGENTS WANTED EVERYWHERE.

THE BEST LIGHT CO.
106 E. 5th St., Canton, O.

850,000 GRAPE-VINES

66 varieties. Also Small Fruits, Trees, etc. Best rooted stock. Genuine. Cheap. 2 sample vines mailed for 20c. Descriptive price list free. LEWIS ROESCH, Box C, Fredonia, N. Y.

1922 ITALIAN QUEENS

Untested, \$1.20 each, 12 or more, \$1.00 each.

Select Untested, \$1.50. Tested, \$2.00.

No disease.

Package Bees Priced on Request.

D. W. HOWELL

Shellman, Ga., Box A3.

3-BANDED QUEENS.

As Good as Can Be Found in Beedom.

We know the demand of the beekeeper. He wants the VERY BEST QUEENS, with prompt, efficient service at prices that he can afford to pay. Our queens, service and prices meet these requirements. We are now booking orders for May and June deliveries. Never had any contagious or infectious diseases in our apiaries. Health certificate with each shipment.

—May and June—

Untested \$1.25; 12, \$13.50; 25, \$1.00 each
Select Untested.. 1.50; 12, 16.20; 25, 1.25 each
Select Tested.... 2.50; 12, 27.00; 25, 2.00 each

Pure mating, satisfaction and safe arrival guaranteed in U. S. (proper) and Canada. Get better posted on our queens by sending for our circular and complete price list. Capacity, one thousand queens a month.

HERMAN MCCONNELL, ROBINSON, ILLINOIS.

Golden Queens, 1922

Untested, \$1.25 each, or \$12.00 per dozen; \$90.00 per hundred. Tested, \$2.00 each. Two-pound packages, each delivered with untested queen, \$6.50; two-frame nuclei with untested queen, delivered, \$6.50. Satisfaction guaranteed and shipments from April 15th.

R. O. COX, Box 25, Rutledge, Ala.

Quigley Quality

Italian Queens and Bees are produced by double grafting, producing queens of superior quality and long-lived bees, filling your big hives with bees. Hustlers, hardy, wintering on summer stands. No disease; 36 years in this location. Purity and satisfaction guaranteed.

Tested May and June \$3.00

Fine Breeders \$10.00

Untested, May and June..... \$ 2.00

Six for \$11.00

3-frame Nuclei, tested queen..... \$ 7.50

Send for circular.

E. F. QUIGLEY & SON,
Unionville, Missouri.

TALKING LAWS' QUEENS QUEENS

SPEAK FOR THEMSELVES

Over thirty-five years as commercial queen-breeder and advertiser in this journal have brought orders from thousands of Gleanings readers. If there is a dissatisfied customer I do not know it. I have many testimonials that make me glad. One firm bought over 5000 queens of me, and writes that my "queens and business methods are very satisfactory." Another writes, "Your queens are all good queens. Our individual crop of honey was 105,000 pounds season 1921; Laws' queens did it."

PRICES: Untested, each, \$1.25; 12 for \$12. Tested, each, \$1.50; 12 for \$15. Breeding queens, none better if as good, each, by mail, \$5; or with a 3-frame nucleus of her own bees by express, \$10. This nucleus, if ordered early, should gather honey enough to pay all costs. Write for prices quantity lots. I am prepared to furnish in large lots; also bees in three-frame nuclei. No disease; entire satisfaction. Address

W. H. LAWS, BEEVILLE, BEE COUNTY, TEXAS

Do You Want a Big Honey Crop for 1922?

Thagard's Italian Queens

BRED FOR QUALITY

Will produce workers that will gather a mammoth honey crop for you. Prompt service and perfect satisfaction guaranteed. We are back to Pre-War days prices on queens and bees. Catalog free.

UNTESTED

1 to 12, \$1.00 each; 12 to 49, each, 95c;
49 to 99, 85c each; 100 or more, 80c each.

ITALIAN BEES—WITH ITALIAN QUEENS.

1-pound package..... \$3.00
2-pound package..... 5.00

If you want untested queens bred from any special breeders, the price will be:
1 to 5, \$1.50 each; 5 to 12, \$1.10; 12 to 50, \$1.00 each.

V. R. THAGARD CO. - - GREENVILLE, ALABAMA.



Queens of Quality

from the famous Black Belt of Alabama, the section suited by nature to the production of queen bees. Three-banded Italians, bred for honey production, disease-resistance and gentleness. There is no disease in my neighborhood. Entire satisfaction guaranteed. Descriptive circular on request. Untested, \$1.25; Tested, \$2.00.

P. M. WILLIAMS, Ft. Deposit, Ala.

Package Bees

---AND---

Reliable Queens

GOLDEN AND THREE-BANDED ITALIANS

We are now in a position to accept orders for queens and bees for spring shipping in large quantities. We have the stock and experience necessary to handle your orders, whether large or small.

1-lb. Package with Queen..\$3.00
2-lb. Package with Queen.. 5.00
3-lb. Package with Queen.. 7.00
Tested Queen 1, \$2.50; six..12.00
Untested1, 1.25; six.. 7.00
Select Untest. 1, 1.50; six.. 8.00

We are in position to fill orders from 100 to 5000 queens or packages. Safe arrival and satisfaction guaranteed.

Terms, 25% to book orders.

E. A. SIMMONS
GREENVILLE ALABAMA

THREE-BANDED

ITALIAN QUEENS

WITH PACKAGE BEES AND NUCLEI

All I have for sale are guaranteed to please. Can start your shipments as early as April 20th. Prices for nuclei and packages, furnished with vigorous Italian queens, as follows:

One 2-frame nucleus with untested queen, \$5.00; in dozen lots, \$4.50. One 2-frame nucleus with tested queen, \$5.50; in dozen lots, \$5.00. Two-lb. package hybrid bees with untested queen, \$5.50; twelve, \$5.00; in lots of 25 or more, \$4.75.

Disease of any kind has never been recorded in our county. Health certificate and instructions accompany each package. Satisfaction is guaranteed, and you are to be the judge. 25% deposit books your order, balance due at time of shipment. I have arranged for better railway service by shipping from Clarksville.

Address all orders to

BAUGHN STONE
CLARKSVILLE, TEXAS.

Three-Banded Italian Bees & Queens

2 lbs. bees, 1 untested queen, \$5.00. Special price on 2-lb. packages without queens. No diseases. Safe delivery and satisfaction guaranteed. Ask for prices on large orders. Health certificate with each shipment.

J. L. LEATH,
CORINTH, MISSISSIPPI.

Three-Banded Italian QUEENS

Bred from queens whose bees have given big crops of honey. Pure mating and satisfaction guaranteed. May 15 to June 15: 1, \$1.50; 6, \$7.50; 12, \$13.50. All orders filled in rotation. First on list will be first filled.

J. D. KROHA, 87 North St., Danbury, Conn.

Northwestern Headquarters for Italian Queens

The queen is the life of the colony. You cannot afford to keep poor queens or a poor strain of bees. I have been in the bee business for more than twenty years and have made every effort to improve the honey-gathering qualities of my bees by purchase of breeders and by selective breeding. I believe that my bees are unsurpassed by any. When you buy Untested Queens from me you are getting select untested queens. I will begin mailing queens about June 1.

Prices June 1 to October 1:	1	6	12	50	100
Untested Italian Queen.....	\$1.25	\$7.00	\$12.50	\$50.00	\$95.00
Tested Italian Queen.....	2.00	11.00			

I have no pound packages or nuclei for sale.

J. D. HARRAH, Route 1, FREEWATER, OREGON

BURLESON'S OLD RELIABLE Three-Banded Italian Queens

NONE BETTER—Not as cheap as some, but worth the difference. I guarantee them to be absolutely free from brood diseases.

These are My 1922 Prices—Untested, \$1.25 each; \$13.50 per doz; 25 or more, \$1 each. Select Untested, \$1.50 each; \$15 per doz., 25 or more, \$1.15 each. Select tested, \$3 each.

Considering the high quality of my queens combined with service and reliability justifies the above prices. Send all orders together with remittance to

J. W. SEAY, Mgr., MATHIS, TEXAS

T. W. BURLESON, WAXAHACHIE, TEXAS.

QUEENS Three-Band Italians

PACKAGE BEES

QUEENS Silver Gray Carniolans

Orders booked with 25 per cent deposit, balance just before shipping. Deliveries start April 1st. Safe arrival guaranteed of bees within 5 days of shipping point, queens anywhere in U. S. A. or Canada. Circular free.

1-pound package	\$2.00 each.	10 or more	\$1.75 each
2-pound package	3.50 each.	10 or more	3.00 each
3-pound package	5.00 each.	10 or more	4.50 each
1 Untested queen	1.25 each.	10 or more	1.20 each
1 Select Untested queen	1.50 each.	10 or more	1.40 each
1 Tested queen	2.00 each.	10 or more	1.80 each
1 Select Tested	2.25 each.	10 or more	2.00 each

Write for prices in large lots.

Breeders, extra selected and tested for breeding.....\$5.00 each

References by permission—First National Bank of San Jose; Security State Bank, San Jose, American Bee Journal, Hamilton, Ill.; Western Honey Bee, Los Angeles.

J. E. WING, 155 SCHIELE AVENUE, SAN JOSE, CALIFORNIA

ITALIAN BEES AND QUEENS COMB PACKAGES AND NUCLEI FOR 1922.

Backed by years of experience in building our apiaries to a high standard by breeding from the best; we are prepared to furnish bees and queens that satisfy, and solicit your orders guaranteeing safe arrival and satisfaction. Certificate of inspection accompanies each shipment. We have found from years of experience that bees shipped on comb invariably reach their destination in very best condition.

FULL WEIGHT PACKAGES.

EXTRA-STRONG NUCLEI.

Booking orders now for shipment May 1, 1922. Terms: 20% cash with order.

2-lb. package with young Italian queen, 1 or more, \$4.75; 12 or more, \$4.40; 25 or more, \$4.00
3-lb. package with young Italian queen, 1 or more, 6.25; 12 or more, 5.90; 25 or more, 5.50
3-frame nuclei with young Italian queen, 1 or more, 6.50; 12 or more, 6.15; 25 or more, 5.75

References: First National Bank, Bainbridge, Ga.; Maddox Commission Co., Bainbridge, Ga.; Apalachicola State Bank, Apalachicola, Fla. Members of: Florida State Beekeepers Association, Tupelo Honey Exchange, Wewahitchka, Fla.

M. L. NISBET & BRO.

Apiaries, Ranletts Ldg., Fla.

P. O. BAINBRIDGE, GA.

Northern-bred Queens Are Hardy Queens

We are in position to furnish you good, hardy, thrifty queens, the result of ten years' selective breeding, the best breeders from over seven hundred colonies. Each breeder has a honey record. Each year new stock has been secured, and so we have built up a strain of bees which, I believe, cannot be beaten in the Northwest. Orders will be handled promptly. On large orders secure mailing date. Fifteen per cent down, balance two weeks before shipment. Shipments begin June 1.

1 Untested Queen.....	\$ 1.50
6 Untested Queens.....	7.50
12 Untested Queens.....	14.00
50 Untested Queens.....	55.00
100 Untested Queens....	100.00
Tested Queens, each.....	2.50

WELLS D. ROSE
Sunnyside, Washington

I PAY TRANSPORTATION CHARGES ON PACKAGE BEES



1-lb. package, including
young three-banded
queen\$4.50

2-lb. package, including young three-banded
queen\$6.00

3-lb. package, including young three-banded
queen\$7.50

25 cents per package less for twelve or more
packages. Delivered to your address via parcel
post. In comparing my prices with others, take
in consideration you have no express charges to
pay. Parcel post shipments go through quicker.

SELECT (one grade) untested queens, \$1.50;
six, \$8.00; twelve, \$15.00. Safe arrival of bees
and queens, pure mating, and satisfaction guar-
anteed. Let me book your order now with ten
per cent cash, balance just before shipping.
Shipment will be made on the day you name. I
have not yet disappointed a customer. No dis-
ease.

JASPER KNIGHT
HAYNEVILLE, ALABAMA

HONEY

Beekeepers who are supplying Honey to a regular family trade, or who are located along the highways, and are supplying motorists, know that their customers want a honey of a uniform color and flavor. And unless the honey is at all times uniform in color and flavor, customers sometimes become dissatisfied. Our special blend of Fancy Honeys (liquid) is always uniform and is of a fine mild flavor, and will satisfy the most exacting trade.

Special Blend of Fancy Honey (Liquid)

10-lb. Tins, 6 per case.....	16c lb.
5-lb. Tins, 12 per case.....	17c lb.

Various Grades, Crystallized, 60-lb. Tins.

Water White Orange.....	15c lb.
White Sage	13c lb.
Extra Light Amber Sage.....	11c lb.
N. Y. State Buckwheat.....	10c lb.

GLASS AND TIN HONEY

CONTAINERS

2½-lb. Cans, 2 doz. reshipping cases,
\$1.45 per case; crates of 100.....\$5.00

5-lb. Pails (with handles), 1 doz. re-
shipping cases, \$1.35 per case;
crates of 100 7.75

10-lb. Pails (with handles), ½ dozen
reshipping cases, \$1.10 case; crates
of 50 5.75

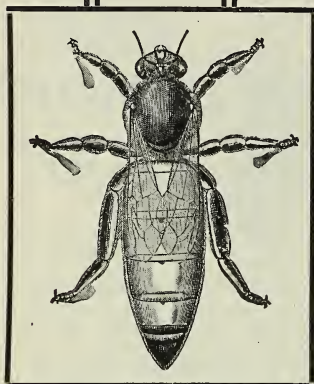
60-lb. Tins, 2 per case—NEW \$1.30
case; USED25

White Flint Glass, With Gold Lacquered
Wax Lined Caps.

16-ounce Honey Capacity.....
.....\$1.40 per carton of 2 dozen

Quart or 3-pound Honey Capacity....
.....\$1.00 per carton of 1 dozen

HOFFMAN & HAUCK, INC., WOODHAVEN, NEW YORK



PURE ITALIAN BEES AND QUEENS

Mr. Honey Producer:—One way to get larger yields per colony is to head each colony with a good young queen. I offer you the best queens I can produce, reared from breeders tested last fall. Drone mothers are selected with as great care as breeders.

My queens are light-colored, large and prolific, and will produce workers that will gather honey for you. Every queen sent out is reared by me, and is therefore of personal interest to me.

Record of safe deliveries last season was 98% for packages and 95% for queens (including 2% lost in packages). Packages arriving in bad order replaced to extent of damage on receipt of express bad order bill.

Queens arriving dead are replaced on receipt of dead queen which should be sent back by return mail. I guarantee pure mating so I make prices on untested queens only.

PURELY MATED UNTESTED QUEENS.

1 to 6 (selected).....	\$1.50 each
6 to 12	1.25 each
12 to 50	1.15 each
50 or more.....	1.00 each

Breeders with comb of sealed brood delivered by express, \$12.00.

For pure Italian bees by the pound or nuclei see my advertisement in classified column of March issue.

20% to book order, balance about 15 days before date of shipment. Orders booked in rotation unless date specified.

J. L. ST. ROMAIN
HAMBURG, LA.

Beekeepers' Legal Rights

The American Honey Producers' League has accepted the offer of Mr. Colin P. Campbell of Grand Rapids, Michigan, to compile and make a digest of all of the court decisions affecting the bee business and the legal questions arising from beekeeping.

This work will be published by the League in booklet form and will be sold to beekeepers, who will thus have available a handy reference book in case of legal difficulty or unjust discrimination. It will cost about \$500 to publish this work.

Will you help?

Donations are requested from beekeepers everywhere and from dealers in honey or bee supplies. Make checks payable to American Honey Producers' League and mail to Secretary, San Antonio, Texas.

PACKAGE BEES

All bees are shipped on a standard Root frame, emerging bees with honey.

April 15th to May 10th Shipments.

1 pound bees, with frame.....	\$2.50
2 pounds bees, with frame.....	3.75
3 pounds bees, with frame.....	5.00

Add price of queen if wanted.
Untested three-banded\$1.50
Tested three-banded 1.75

For shipments after May 10th
deduct 12 per cent.

Please order from this advertisement. 15 per cent down to book orders. Balance fifteen days before shipping.

L. C. Mayeux
BOX 15, HAMBURG, LOUISIANA.

QUEENS

Three-banded Italian Queens that must please and give entire satisfaction. We do not claim to have the best, but do claim them to be as good. No disease, and pure mating guaranteed.

—Prices to July the 1st—

Untested, \$1.25; 11 to 23, \$1.10 each; 24 or more, \$1.00 each. Tested, \$1.60 each; 12 or more, \$1.50 ea.

Nuclei

Two-fr. with untested queen...\$5.50
Three-fr. with untested queen... 7.50
Ten or more, 10 per cent less.

Cypress Bee Supplies

Hives, hive-covers, bottom-boards, supers, frames, foundation, etc. All supplies will be shipped from Coker, Ala.; all bees and queens from Crawford, Miss.

The Abston Apiaries

Crawford, Miss. Coker, Ala.

¶ Mr. T. E. Spencer of Shell, Wyo., produced 249 pounds honey and increased to three colonies from 4 lbs. of Milam's bees. See Gleanings for December, 1920, pages 728-29.

* * * * *

¶ I am once more prepared to supply a limited number of queens and 2-lb. packages of bees at following prices:

1 untested queen, \$1.50; fifty or more, \$1.25. 1 two-pound package, no queen, \$4.25; fifty or more, \$4.00. Add price of queen wanted.

* * * * *

¶ Shipment begins first of May. 10% cash with order; balance just before shipment. Safe arrival guaranteed.

* * * * *

¶ References—Moore National Bank, Moore, Texas; The A. I. Root Company of Texas, San Antonio, Texas.

* * * * *

O. E. MILAM

MOORE, TEXAS.

Light three-banded bees and queens for April, May and June delivery. We stand for stock, promptness, safe delivery, satisfaction and no disease. We want to please our customers.

All bees are shipped on Root Standard Hoffman frame, brood and honey, which means safe delivery, and equal to a pound of bees. Queens introduced laying en route.

2 pounds bees, no queen, \$3.75. Add \$1.00 for each additional pound of bees or frame emerging bees.

2-fr. nuclei well covered with young bees, \$3.75 ea. Add \$1.00 for each additional pound of bees or frame emerging bees.

The package that brings results—5 lbs. bees on two frames emerging bees, \$8.00.

Queens for the above packages, \$1.25 each; 5% discount on 20 or more packages; 15% with order; balance at shipping time.

+ + +

THE HOME OF GOOD QUEENS.

Oscar Mayeux.

Hamburg, Louisiana.

We Furnish Colonies and Nuclei of

Italian Bees

in Hives and Shipping Boxes.

Tested Italian Queens - \$2.00

Untested Italian Queens \$1.50

6 Untested Ital. Queens \$8.00

A full line of Apiarian Supplies always in stock. Let us quote you. Price list on request.

I. J. STRINGHAM
GLEN COVE, NASSAU
COUNTY, NEW YORK

HUMMER BEES and QUEENS ARE BLUE RIBBON WINNERS

The following unsolicited testimonial speaks for itself:

West Allis, Wisconsin, January 10, 1922.

Geo. A. Hummer & Sons, Prairie Point, Miss.

Gentlemen:—Enclosed find check for \$16.25, being the initial payment on 25 3-frame nuclei and queens.

I was extremely well satisfied with the bees you sent me last year; they did very well indeed, and at the Wisconsin state fair I secured first premium on bees and queens from them.

I had an opportunity to secure nuclei very much cheaper than you offer, but when I take into consideration your excellent packing, prompt shipment, and honorable business dealings, I feel satisfied to remain your customer.

Very sincerely yours,
JOSEPH M. BARR.

We have been in the bee business in Mississippi for 30 years, and have bred up a strain of bees that are unexcelled for honey gatherers and gentleness. We make all shipments on time, as we have hundreds of strong colonies to draw from, and do not book more orders than we can fill. We are located on a trunk line railway, north and south; quick trips assured, reach Chicago in 24 hours; New York, N. Y., in 48 hours; Detroit in 42 hours; far western points in 4 to 5 days.

Prices F. O. B. Macon, Mississippi.

2-frame Nuclei and Untested Italian Queen... \$5.00 each; 25 or more... \$4.75 each.

3-frame Nuclei and Untested Italian Queen... 6.50 each; 25 or more... 6.25 each.

If tested queens are wanted, add 50 cents to above prices. Terms: 10 per cent of amount with order, balance just before shipment is made. We replace all loss on receipt of bad order receipt from your express agent, or refund money, at your option. We guarantee pure mating of queens, safe arrival, satisfaction, and prompt, efficient service.

You Will Not Be Disappointed If You Order From Us.

GEO. A. HUMMER & SONS, PRAIRIE POINT, MISSISSIPPI



Collier's Quality Queens

Breeding Queens Imported from Italy.

Three-Banded Italians Only.

Shipped When You Want Them.

Let me have your order for the 1922 season. My queens are bred by men who know how. Every order given my personal attention. All queens reared in strong two-story, ten-frame hives, under natural conditions.

Improve your weak, run-down colonies by using young, vigorous, three-banded Italian Queens from my imported stock.

You take no risk buying from Collier. If you are not satisfied I will replace or refund your money. Safe delivery guaranteed.

Untested—1, \$1.50; 6, \$7.50; 12, \$13.50. Selected Untested—1, \$1.75; 6, \$9.00; 12, \$16.50. Tested—1, \$2.50; 6, \$13.00; 12, \$24.50. Selected Tested—1, \$4.00; 6, \$22.00; 12, \$41.50.

D. E. COLLIER, RAMER, ALABAMA.

Make the *WEAK* STRONG

by using

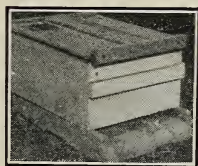
Forehand's

Three-Band Italian

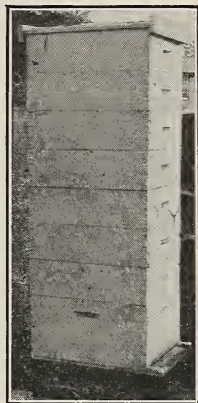
Bees

and

Queens



POOR QUEEN,
weak colony, invita-
tion to disease, ex-
pense not profit.



GOOD QUEEN,
strong healthy colony,
pride and profit to
owner.

Make your weak run-down colonies good ones by using young, vigorous 3-band Italian Queens, backed by 28 years of successful breeding. With the cost of supplies plus the cost of production, can you afford colonies occupying perfectly good hives and combs, netting you nothing or a small profit? We must produce our honey at less cost, to meet the lower prices. Can you make a better start than by bringing those non-producers to the front? Give them a queen that will have the hive chock-full

of young bees ready for the harvest, instead of being in a weak condition when bees are needed most. Give my imported stock a trial. You risk not a penny; if you are not satisfied, notify me and I will replace or refund your money. If the colony is too weak for a queen alone, get one or two pounds of my Italian Bees with queen. Introduce to the old colony and watch them build up. Let me make you one of my satisfied customers. I have thousands of them in U. S. and Canada.

Untested—1, \$1.50; 6, \$7.50; 12, \$13.50. Selected Untested—1, \$1.75; 6, \$9.00; 12, \$16.50. Tested—1, \$2.50; 6, \$13.00; 12, \$24.50. Selected Tested—1, \$4.00; 6, \$22.00; 12, \$41.50. One pound bees **WITH QUEEN**, \$3.00; two pounds bees **WITH QUEEN**, \$5.50; 10 or more 2-lb. packages **WITH QUEEN**, \$5.00. Write for prices on large lots. Queens are ready by return mail.

N. FOREHAND, RAMER, ALABAMA.

Queens

*Bright Three-Banded
Italians.*

Announcement

---to---

Queens

*Bright Three-Banded
Italians.*

Beekeepers

We are now booking orders for queens for the season of 1922. Shipments of queens this year commenced on March 15, 1922.

All queens are mated in standard full-sized three-frame nuclei.

We are operating four thousand standard full-sized three-frame nuclei.

Capacity and output this season are five thousand queens per month.

We own, operate and run for extracted honey in the States of California and Nevada twelve thousand colonies of bees. All of our breeders are selected queens whose colonies led these twelve thousand colonies of bees last season. Better selection of breeders cannot be equaled or had anywhere.

We have the capacity and output of queens to make shipments promptly as and when promised.

All queens shipped by us in six-hole mailing cages. No small-sized mailing cages used.

We guarantee safe arrival of queens. Any queens arriving dead at destination will be replaced without charge.

References by permission: The A. I. Root Co. of California, No. 52 Main St., San Francisco, California, and No. 1824 East Fifteenth Street, Los Angeles, California; The Diamond Match Company, Apicary Department, Chico, California; The Western Honey Bee, No. 121 Temple Street, Los Angeles, California; Bees and Honey, Hutchinson Building, Oakland, California; The Beekeepers

Review, Lansing, Michigan. Banking references on request.

We respectfully solicit your patronage.

Prices and Terms

Untested Mated Queens

1	\$1.00
6	\$5.50
12	\$9.60

In larger quantity
75 cents each.

In quantity of 100
or more write for
special price.

Terms

10 per cent deposit
on booking order.
Balance at time of
shipment.

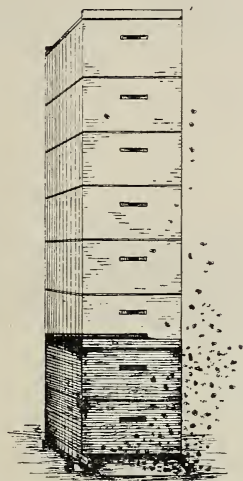
Western Bee Farms Corporation

(PRINCIPAL)

Western Honey Corporation --- Western Citrus Honey Corporation
(ASSOCIATED CORPORATIONS)

General Offices: Claus Spreckels Building, No. 703 Market Street, San Francisco, California.

What Will the Harvest Be?



DO YOU KNOW why your honey crop is sometimes a failure? The season is not always to blame. In the best seasons it takes the best queens. Are you preparing for a good season? Then you will requeen from some thrifty strain of bees.

Don't save 10c or 15c on a queen and lose your crop of honey. An inferior queen cannot meet the demands of a good season. You find this out after it is too late to save the crop.

When you buy queens—the factor that will make or lose your honey crop—do you **guess** they are good or do you buy the kind that have been tested for 29 years by America's greatest honey producers.

PRICES.

	1	6
Untested	\$1.50	\$7.50
Select Untested..	1.75	9.00
Tested	2.50	13.00
Select Tested...	4.00	22.00
	100	
	Each	
Untested	\$13.50	\$1.00
Select Untested	16.50	1.25
Tested	24.50	2.00
Select Tested..	41.50	3.35

POUND BEES.

To June 30.

	1	25 or more.
1-lb. package...	\$2.75	\$2.50
2-lb. package...	4.75	4.50
3-lb. package...	6.75	6.50

Add price of queen wanted.

Forehand's Three Bands

The Thrifty Kind

take the guess out of buying queens. They have stood the test in six countries and in almost every state in the Union. Years of careful breeding have brought them up to a standard surpassed by none but superior to many.

Get a copy of our 1922 booklet, "Our Crow," and read what others say about our bees and service.

We guarantee pure mating and perfect satisfaction the world over. Safe arrival is guaranteed in the United States and Canada.



W. J. FOREHAND & SONS
FORT DEPOSIT, ALA.

HUBAM



*Strong
contented
colonies &
an abund-
ant surplus
of Honey
this Fall*

**65¢ per lb.
in any
quantity**



Buy Now!

MICHIGAN STATE FARM BUREAU
BOX C-3 — SEED DEPARTMENT — BOX C-3
LANSING — MICHIGAN



Achord's Italians Are Good Bees

Whether you have only a few colonies or five hundred, we believe you will like them and they will prove a worthy addition to your yard. They are a bright, hustling, three-banded strain bred primarily for honey production, but also for gentleness and color. We have spared neither labor nor expense to make them the very best. We begin shipping about April 15th.

Price of Packages, April and May, F. O. B. Shipping Point, by Express.

1-pound package	\$2.25	25 or more	\$2.15	50 or more	\$2.00
2-lb. package	3.75	25 or more	3.50	50 or more	3.35
3-pound package	5.25	25 or more	5.00	50 or more	4.85

Add price of queen wanted to package price given above.

Price of Queens, April and May.

Untested, each.....	\$1.25	Ten or more.....	\$1.15 each	25 or more.....	\$1.00 each
Select Untested	1.35	Ten or more.....	1.25 each	25 or more.....	1.15 each
Tested, each.....	2.00	Ten or more.....	1.75 each		

We guarantee safe arrival and satisfaction.

W. D. ACHORD, FITZPATRICK, ALABAMA.



Finest Basswood— —Finest Sections



The A. I. Root Company's portable saw mill at Medina cutting up basswood logs specially selected by Root timber experts. The lumber for millions of sections is sawed annually by this mill.

THE best Comb Honey Sections are made where the best basswood can be secured and when this best basswood is best cured and best dried.

NORTHERN Ohio's native forests were full of the finest basswood trees, and still have a large amount of this timber. Today there is also an abundance of second-growth basswood—the whitest and toughest kind of basswood.

OUR own timber experts select the trees in the woods, insuring the highest quality of lumber. The logs are sawed by our own portable sawmill, or, if too far distant from our plant, they are sawed by local mills and the lumber hauled to our yards by the timber owners.

THE boards are winter-sawed, then piled green and thoroughly air-dried. Later the lumber is stored under immense open sheds to thoroughly shrink and cure before going into our saw rooms. This is the best possible drying process.

IN our saw rooms, only the best basswood boards are selected for sections, and our specially designed machines saw out the sections, dovetail them with perfect smoothness, polish both sides, giving uniform thickness of a full eighth inch, and shear cut our improved V-groove that guarantees rigid boxes and least possible breakage.

THAT is the way ROOT "QUALITY" Sections are made, from tree to packing box—the best way all the way. Although we have a double shift working on sections we are several cars behind orders, which fact indicates that many beekeepers believe that ours are the best sections.

Send Today for Sample

THE A. I. ROOT COMPANY
WEST SIDE STA., MEDINA, OHIO